Construction
Machinery & Supplies

The Victor L. Phillips Co.

Kansas City Mo
Tulsa Okla Oklahoma City Okla
Wichita Kans.

Catalog No. 20

CONSTRUCTION MACHINERY and SUPPLIES

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The Victor L. Phillips Co.

CONSTRUCTION MACHINERY *and* SUPPLIES

Catalog No. 20

COMPLETE SERVICE *for*

- BUILDING
- PAVING
- GRADING
- SEWERS
- BRIDGES
- DRAINAGE
- MINING
- EXCAVATING
- STRIPPING
- QUARRYING
- HOISTING
- DREDGING
- MUNICIPAL
- INDUSTRIAL
- TRANSPORTATION
- ROAD BUILDING

KANSAS CITY, MISSOURI
16th and Baltimore Streets

WICHITA, KANSAS
150 South Washington

OKLAHOMA CITY, OKLA.
1222-24 West Main

TULSA, OKLAHOMA
1400 East Sixth

OUR PRIDE AND YOUR PROFIT

20 Years Continuous Service to the Contractor

There are three things which are a source of pride with us, three sources of profit to our customers: our lines, our organization, and our service. During the past twenty years The Victor L. Phillips Co. has experienced a phenomenal growth under the motto, "If it isn't the Best in its field, we won't handle it." The present efficiency of our service is the direct result of years of experience in selecting only the best machines, methods, and men.

New inventions, new efficiency, and new improvements are constantly being developed to aid the contractor in every phase of his varied work. It is our policy and our pleasure to investigate these innovations and select only the best for our line, which is sold under our recommendations. This practice has enabled us to bring together the leaders in the large number of lines we handle.

We are proud of our lines—they mean profits to our customers.

Our organization, brought together for the purpose of keeping our service on the same level of excellence, is composed of specialists in this business, men of genuine ability. The handling of construction machinery and supplies is built upon the ability to intelligently serve the best interests of the contractors in this territory. It was with this in view that our staff of engineers was selected. They are ready to take up any problem and give recommendations that combine saving and efficiency for our customers. If you are confronted with an installation which involves the use of a number of units of equipment, present this problem for our expert analysis and advice. Our men will save you money and we are proud of them.

Our service comprises the one hundred and one things that are necessary in making all of our transactions pleasant and satisfactory. We are ready to ship merchandise or repairs immediately after receiving an order by mail, telephone or wire, and to insure prompt delivery a traffic and tracing department follows each step in the order and shipment. Our mechanics' shop and drill steel department were instituted to give the contractor better service. Nothing is spared in our efforts to please our customers, and the praise of our methods by satisfied contractors is a source of pride with us.

Owing to our large buying power, our prices are low—in fact, quality considered, we guarantee to save you money.

The Victor L. Phillips Co.

We Represent These Lines In This Territory

REX PAVERS AND CONCRETE MIXERS.
WONDER MIXERS, HOISTS AND BACKFILLER.
HELTZEL STEEL ROAD FORMS.
STERLING WHEELBARROWS AND CONCRETE CARTS.
BUFFALO-SPRINGFIELD ROAD ROLLERS.
LITTLEFORD MELTING KETTLES AND ASPHALT TOOLS.
ARCHER TUBULAR STEEL TOWERS.
ARCHER MAST HOIST PLANTS.
CLYDE HOISTS AND DERRICKS.
SASGEN DERRICKS AND WINCHES.
CLYDE FORDSON HOISTS.
OWEN CLAMSHELL BUCKETS.
UNION STEAM PILE HAMMERS.
JONES SUPERIOR SAW RIGS.
AMERICAN WIRE ROPE.
STERLING MOTOR TRUCKS.
LITTLEFORD TRAFFIC LINE MARKERS.
HAISS EXCAVATORS AND LOADERS.
WESTERN DUMP WAGONS.
WESTERN ELEVATING GRADERS AND SMALL TOOLS.
WAUKESHA MOTORS.
LE ROI ENGINES.
PLYMOUTH GASOLINE AND DIESEL LOCOMOTIVES.
WESTERN INDUSTRIAL CARS AND TRACK.
CARBIC LIGHTS AND FUEL.
MAC LEOD SAND BLAST AND PAINT SPRAY MACHINES.
REX PLASTER AND MORTAR MIXERS.
COMPLETE LINE OF CONSTRUCTION SUPPLIES.

INGERSOLL-RAND PORTABLE AIR COMPRESSORS.
INGERSOLL-RAND PNEUMATIC TOOLS.
JOHNSON BINS AND BATCHERS.
BACYRUS ERIE SHOVELS, CRANES AND DRAGLINES.
WESTERN ROAD MACHINERY.
UNIVERSAL JAW CRUSHERS AND PULVERIZERS.
CAMERON PUMPS.
REX ROAD PUMPS.
TELSMITH CRUSHERS AND GRAVEL PLANTS.
AMSCO MANGANESE SAND PUMPS.
ORR AND SEMBOWER HOISTS.
AUSTIN TRENCHING MACHINES.
AMERICAN SPIRAL PIPE.
ATLAS IMPERIAL DIESEL ENGINES.
REX CONTRACTORS PUMPS.
VICTOR POWER HOSE.
ATLAS BELT CONVEYORS.
SKELTON SHOVELS AND SCOOPS.
BLACKHAWK WRENCHES AND JACKS.
CUMMER ASPHALT PLANTS.
SWINTEX SAND LADDERS.
GARST PLOW SCRAPERS.
HANDY-SANDY GRAVEL SPREADERS.
HERCULES DYNAMITE AND BLASTING SUPPLIES.
PIERCE ROLLERS.
SKILSAW ELECTRIC HAND SAWS.
VAN DORN ELECTRIC TOOLS.
WATERLOO BAR BENDERS.
FEIGLE BURLAP COVERING MACHINES.
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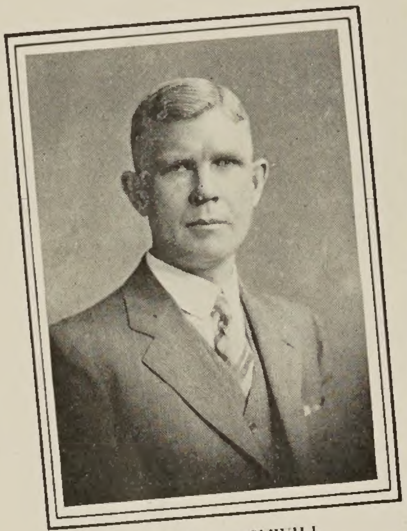

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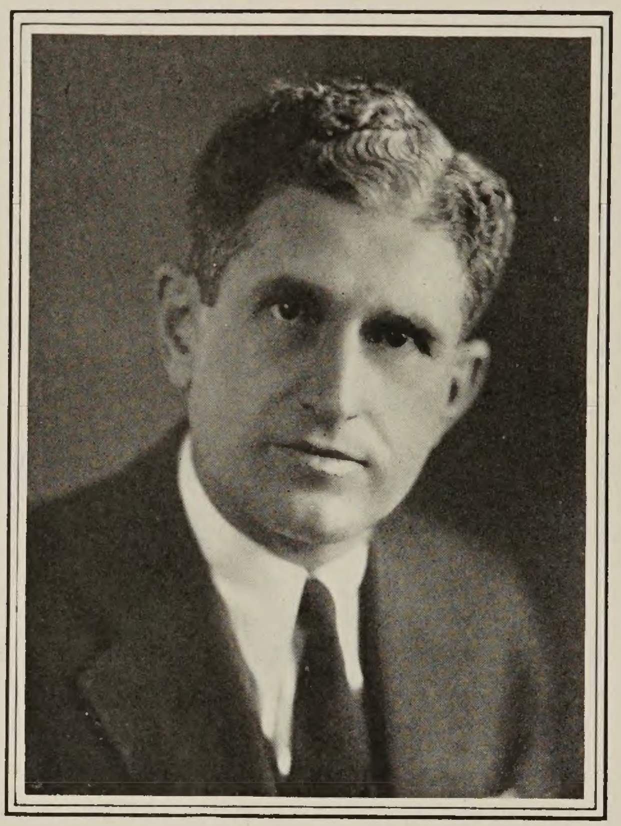

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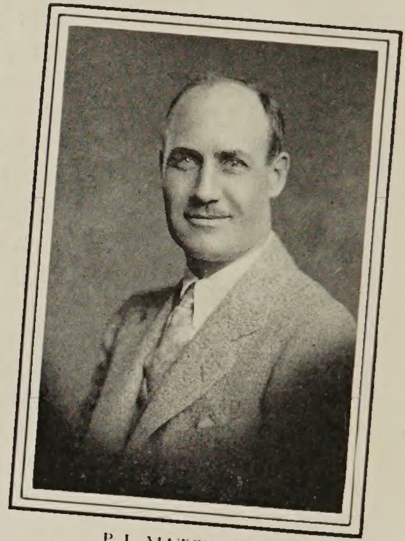

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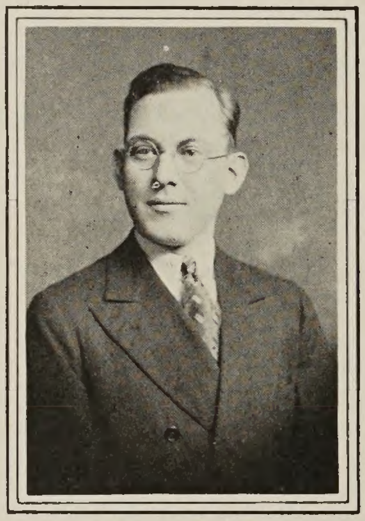

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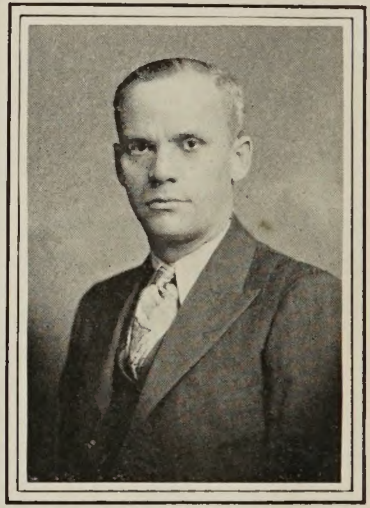

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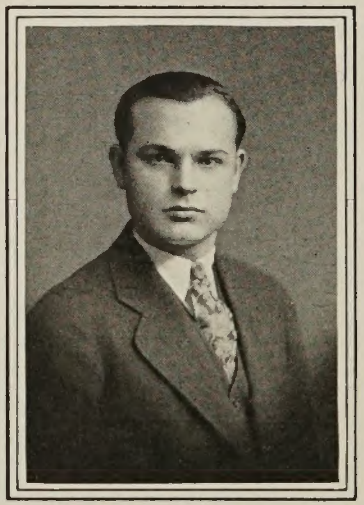

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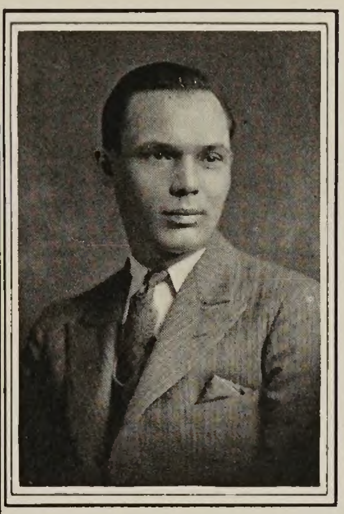
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John McCullagh, Jr.
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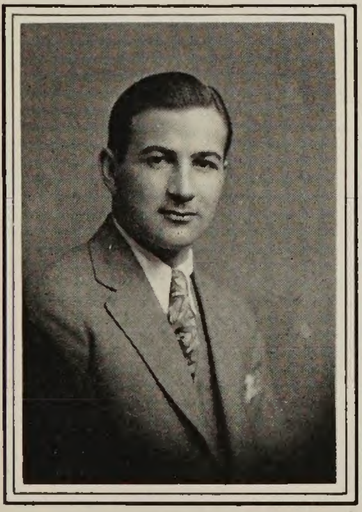
Ingersoll-Rand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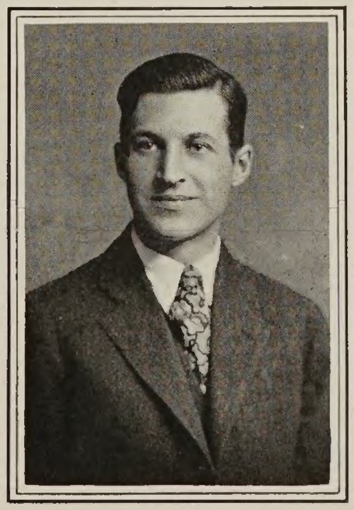

H. W. LANGLOIS

H. A. JOHNSEN

Offices and Warehouses

The Victor L. Phillips Co.

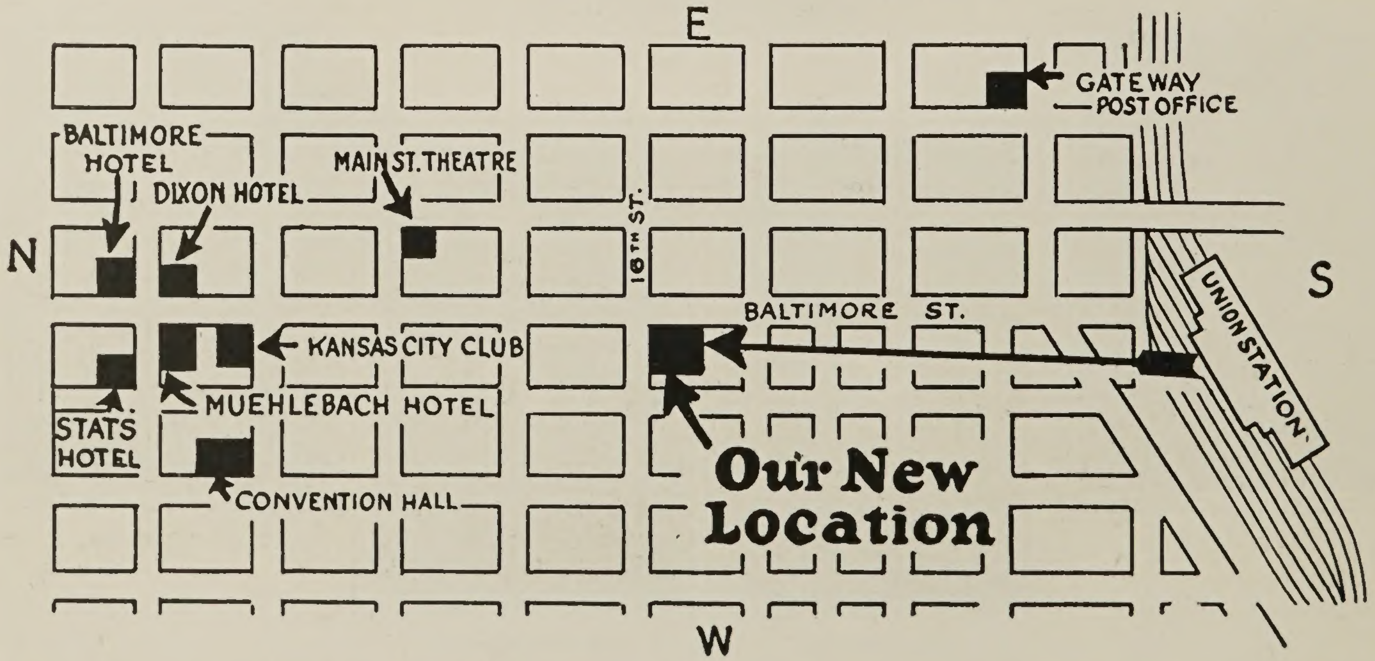
Construction Machinery and Supplies

KANSAS CITY, MISSOURI

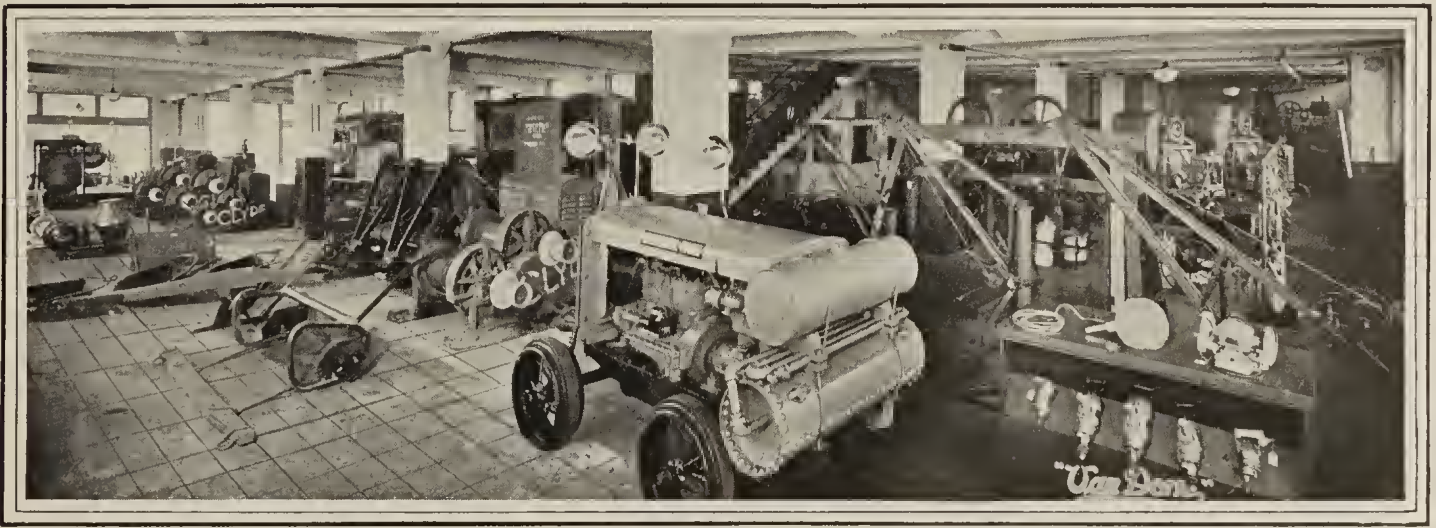
Our Kansas City location is convenient to the hotels, union station and the shopping district. We carry here the largest stock of construction machinery and supplies in the west. Take advantage of our stock and service.

CONSTRUCTION SUPPLIES
The Victor L. Phillips Co.
CONSTRUCTION MACHINERY
CONSTRUCTION SUPPLIES
The Victor L. Phillips Co.

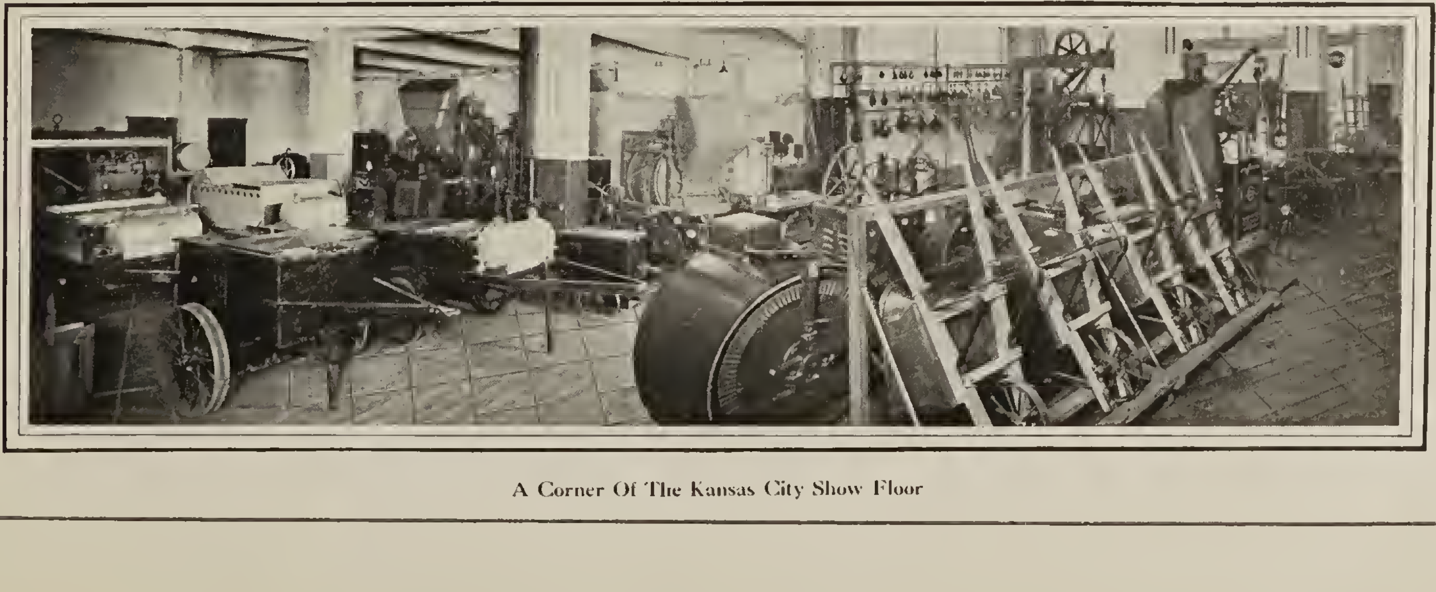
Sixteenth and Baltimore Streets
KANSAS CITY, MISSOURI


E
GATEWAY POST OFFICE
BALTIMORE HOTEL
DIXON HOTEL
MAIN ST. THEATRE
16TH ST.
N
S
UNION STATION
BALTIMORE ST.
KANSAS CITY CLUB
MUEHLEBACH HOTEL
STATS HOTEL
CONVENTION HALL
Our New Location
W

General View Of The Main Office



A Section Of The Show Floor, Kansas City Office



A Corner Of The Kansas City Show Floor

One Part Of Our Hose Department

Storage Bins For Construction Supplies

Wheelbarrow and Concrete Cart Section

Another View of the Small Tools Section

A View of Our Two Carload Shovel Stock

A View of the Concrete Mixer Floor

Entrance To Shipping And Parts Department

A Few Of The Bins In The Parts Department

Another View Of The Repair Parts Department

A Section Of The Shop Showing Drill Steel Sharpener

A Section Of Our Western Grading Equipment

Our
OTHER OFFICES
and
WAREHOUSES

Other than our Kansas City office and warehouse we maintain establishments and carry a complete line of construction machinery and supplies in Oklahoma City, Okla., Tulsa, Okla., and Wichita, Kansas. These four shipping points place every point in our entire territory within twelve hours shipping time of one of these offices and warehouses.

A complete stock of construction machinery and supplies is carried in each of our warehouses for immediate delivery to your job. Write, wire or telephone the nearest office and your immediate needs will be taken care of.

Our Oklahoma City office is located in the heart of the great Oklahoma Oil fields and is situated to take care of all of western and central Oklahoma. This office is well stocked and we carry a complete line of specialty supplies for contractors.

The Tulsa, Oklahoma office is situated ideally for giving service to Southeastern Kansas, Eastern Oklahoma and Western Arkansas. Freight service out of Tulsa is unusually good and you will find the large stock there ready for immediate delivery to your job.

Our Wichita Kansas office and warehouse was established to give better service to central and Western Kansas and to the Panhandle country in Oklahoma.

Western Missouri and eastern and northern Kansas are taken care of from the large Kansas City stock.

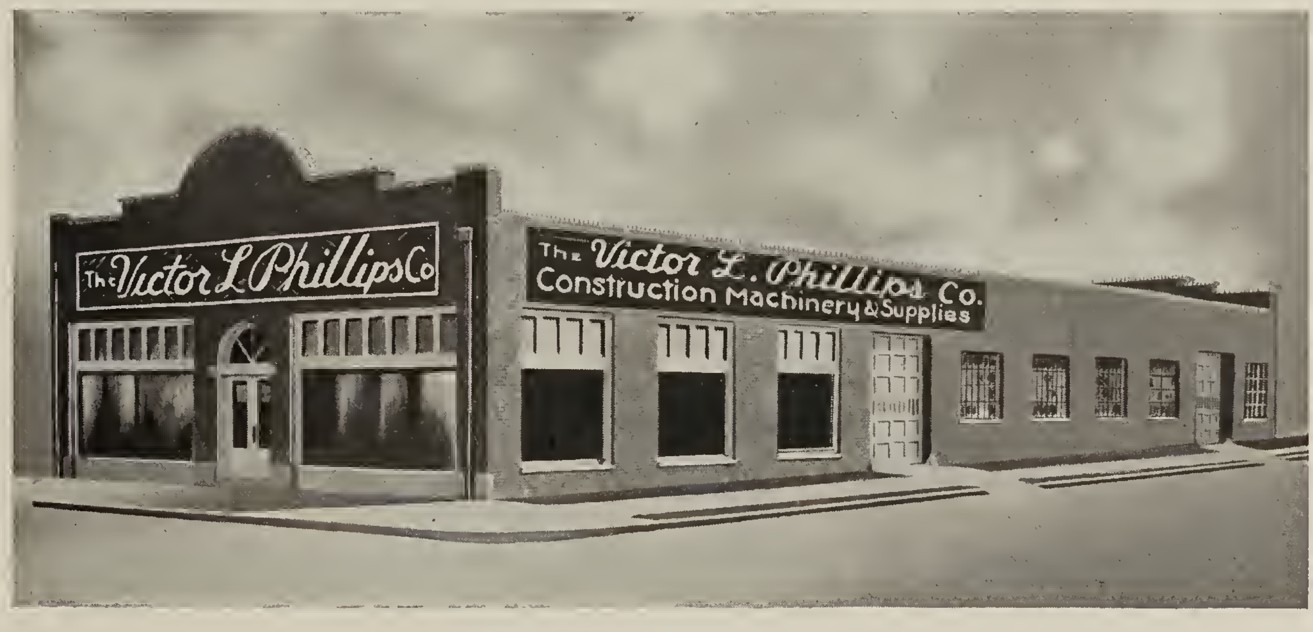
No matter where you are in our entire territory, if you are in a hurry for anything in construction machinery and supplies we are able to take care of you immediately from one of our offices and warehouses. Write, Wire or Phone us for anything you need. We will take care of you.

Wichita, Kansas

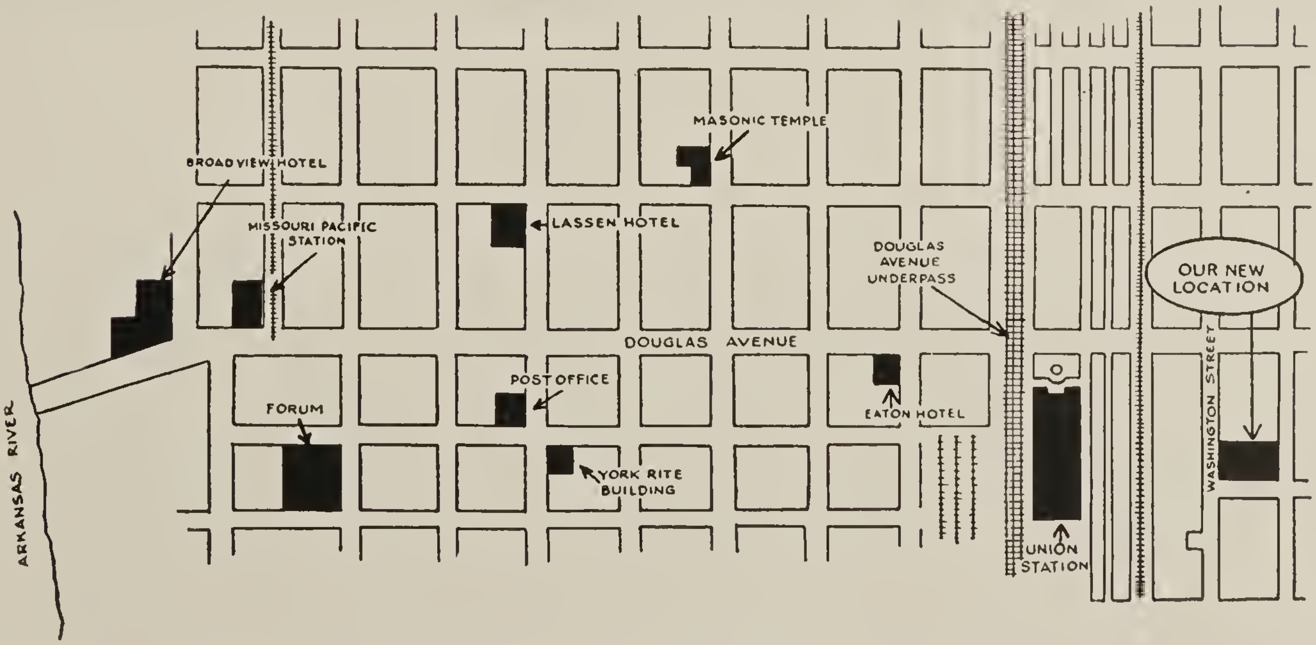
Just prior to the publication of this catalog we established this office and warehouse at Wichita, Kansas, under the management of Mr. E. B. Chambers. The Wichita plant puts every portion of our territory within overnight service of our offices and warehouses.

If you are located in western Kansas you will be glad to know that you have a large stock of construction machinery and supplies to draw from within a few hours time. Take advantage of this new location and let us help you solve your problems.

E. B. CHAMBERS, Manager


The Victor L. Phillips Co.
The Victor L. Phillips Co.
Construction Machinery & Supplies

150 South Washington Street
WICHITA, KANSAS


MASONIC TEMPLE
BROADVIEW HOTEL
MISSOURI PACIFIC STATION
LASSEN HOTEL
DOUGLAS AVENUE UNDERPASS
OUR NEW LOCATION
DOUGLAS AVENUE
POST OFFICE
FORUM
EATON HOTEL
YORK RITE BUILDING
ARKANSAS RIVER
WASHINGTON STREET
UNION STATION

W. R. WILSON, Manager

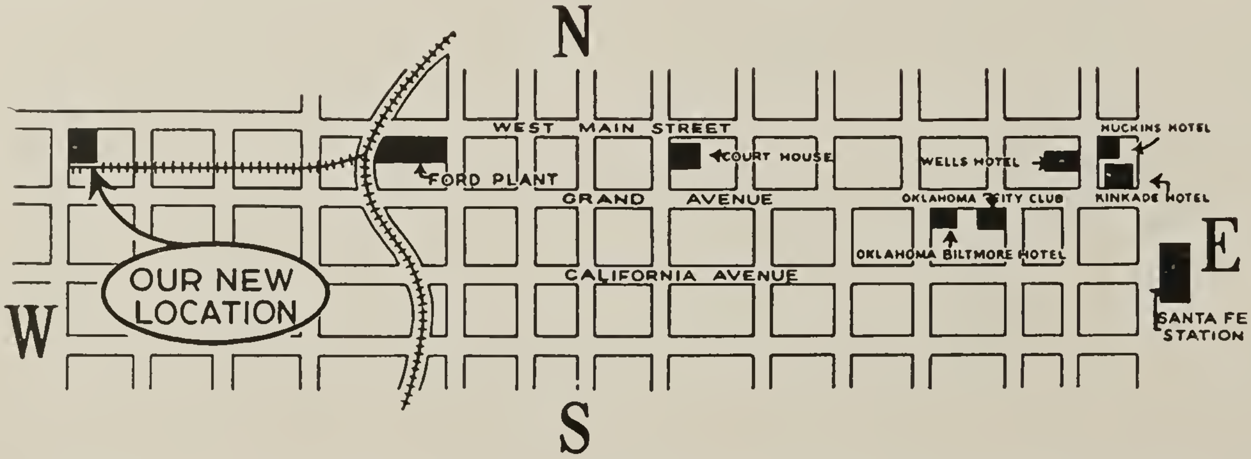
Oklahoma City, Oklahoma

Our Oklahoma City office and warehouse under the management of Mr. W. R. Wilson has been established a number of years. However, we have only recently moved into these larger quarters where we carry a complete line of construction machinery and supplies. We have plenty of parking space and welcome you to use our office and warehouse as your Oklahoma City headquarters.

The equipment and supplies described in this catalog represents the comprehensive line we carry for your convenience and we ask you to call on us for everything you need.

The Victor L. Phillips Co.
The Victor L. Phillips Co.
Construction Machinery & Supplies

1222-24 West Main Street
OKLAHOMA CITY, OKLAHOMA


N
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W
WEST MAIN STREET
GRAND AVENUE
CALIFORNIA AVENUE
FORD PLANT
COURT HOUSE
WELLS HOTEL
HUCKINS HOTEL
KINKADE HOTEL
OKLAHOMA CITY CLUB
OKLAHOMA BILTMORE HOTEL
SANTA FE STATION
OUR NEW LOCATION

Tulsa, Oklahoma

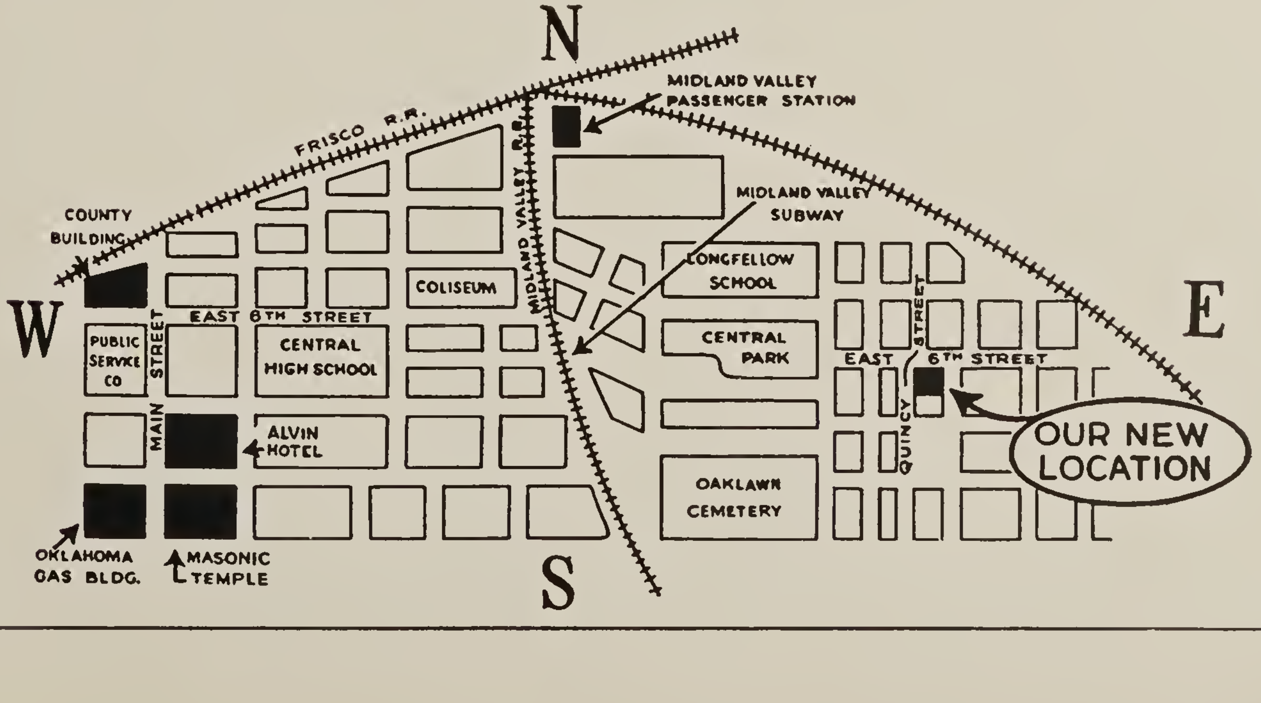
In Tulsa, Oklahoma, we have just moved our offices and warehouse into larger quarters to take care of our increasing stock. You will find a representative stock of construction machinery and supplies ready for immediate shipment to your jobs.

This office and warehouse is under the management of Mr. J. C. Schwenk. You are urged to use this office whenever you are transacting business in Tulsa.

J. C. SCHWENK, Manager

The Victor L. Phillips Co.
The Victor L. Phillips Co.
Construction Machinery & Supplies

1400 East Sixth Street
TULSA, OKLAHOMA


N
MIDLAND VALLEY PASSENGER STATION
FRISCO R.R.
MIDLAND VALLEY R.R.
MIDLAND VALLEY SUBWAY
COUNTY BUILDING
W
COLISEUM
LONGFELLOW SCHOOL
E
EAST 6TH STREET
PUBLIC SERVICE CO
MAIN STREET
CENTRAL HIGH SCHOOL
CENTRAL PARK
EAST 6TH STREET
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OUR NEW LOCATION
OAKLAWN CEMETERY
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To Our Customers

In presenting you this new Catalog No. 20, we are offering you all the service and knowledge we have gained in our twenty years of business with the contractor and engineer. You will find this catalog full of valuable information to anyone interested in construction machinery and supplies and it covers the entire field.

All lists shown herein are correct at time of going to press. They are subject to change without notice. All quotations are for immediate acceptance and also subject to change without notice. Execution of contracts are subject to strikes, accidents, and other causes beyond our control.

Our responsibility ceases on delivery of goods in proper shipping order to carriers, and all recourse rests with the latter, although we are glad to assist you in the prosecution of any claim for damages.

TERMS:—Thirty days net F. O. B. Kansas City, unless otherwise arranged. Goods returned will not be accepted unless permission has been granted for their return, and ten per cent will be deducted from credit unless error is on our part. Cancellation of orders subject to our acceptance.

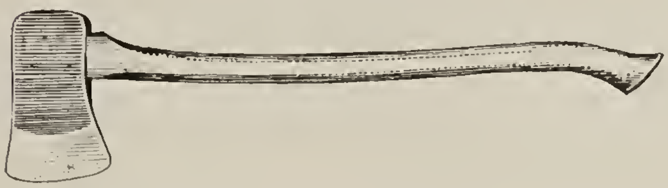
There are many lines we can supply that are not listed in this book. If you do not find what you want, write us about it. We issue separate catalogs covering each piece of machinery shown in this catalog. These special catalogs describe our equipment in detail. They are printed especially for your use and are yours for the asking free of charge postpaid.

We maintain an Engineering Department to help you solve the more difficult problems. Service Stations and skilled mechanics have been added to take care of you in emergencies. Our Traffic and Tracing Department will get your shipment on the job with the least possible delay. This Service is for you. Use it.

Very truly yours,

The Victor L. Phillips Co.

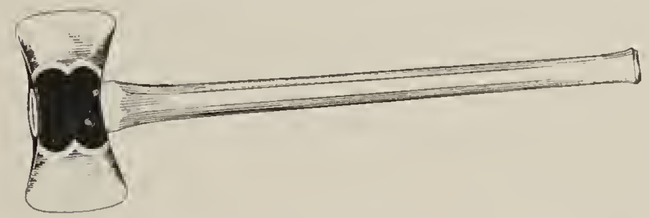
SINGLE BITTED AXES



Michigan Pattern; Soft Steel Body, Crucible Steel Bit, Hand Tempered, Gold Bronze Finish,

Nos.	60S	70S
Assorted wgts., lbs.	3¼ to 3¾	3½ to 4½
Per Doz.	$31.00	32.20

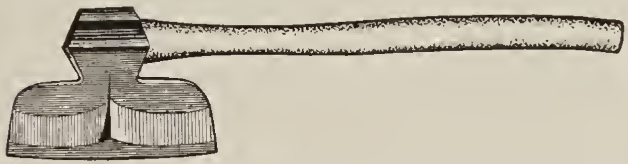
DOUBLE BITTED AXES



Forged from one solid piece of steel. Head is hardened to a spring temper. High grade hickory handle,

Nos.	150S	160S
Assorted wgts., lbs.	3¼ to 3¾	3½ to 4½
Per Doz.	$48.50	$49.70

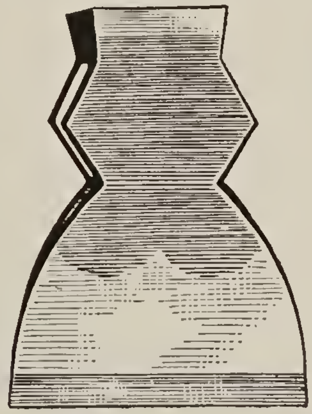
BROAD AXES



Plumbs; improved Canada pattern; hand forged, non-rusting; black finish,

Weight, Lbs.	6½	7
Width, Cut Ins.	10½	11
Per Dozen	$85.00	$85.00
Weight, Lbs.	7½	8
Width Cut, Ins.	11½	12
Per Dozen	$90.00	$90.00

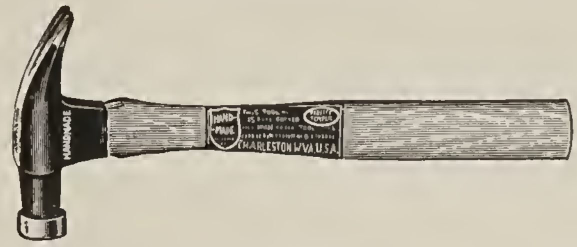
BROAD HATCHETS



Victor crucible Steel, Hand Forged; Single Bevel; Black Finish, Polished Head and Cutting Edge; Select Hickory Handle,

Nos.	321T	322T
Size	1	2
Cut, inches	4	4½
Wt., less handle, lbs.	1½	1¾
Per Dozen	$28.80	$31.20

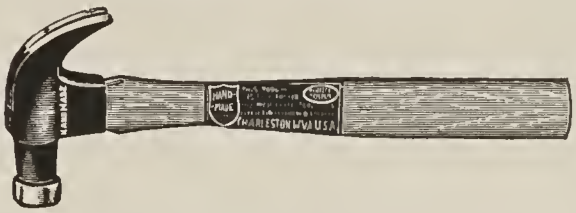
NAIL HAMMERS



Drop forged, crucible steel. Black head with claws and face polished. Seasoned hickory handles. Bell face.

Nos.	111½S
Wgt. of Head	16 oz.
Per doz.	10.80

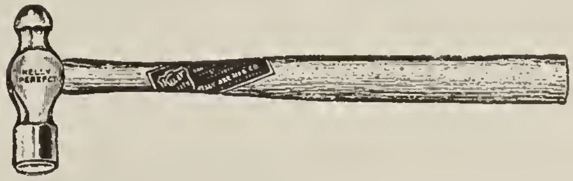
RIPPING HAMMERS



Drop forged, crucible steel. Perfect temper. Black head with claws and face polished. Seasoned hickory handles. Wgt. of head, 1 lb.

No. 711½S .... Per doz. $10.80

MACHINISTS' BALL PEIN HAMMERS



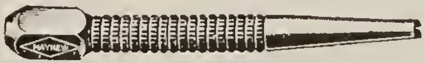
Drop forged. Furnished in either full polished or black finish, with polished face and pein.

Size	0000s	000s	00s	0s
Wgt. with handle	10 ozs.	12 ozs.	1 lb.	1 lb. 6 ozs.
Wgt. of Head	6 ozs.	8 ozs.	12 ozs.	1 lb
Black, per doz.	$11.50	11.50	11.50	12.00

Size	1s	2s	3s
Wgt. with handle	1 lb. 10 ozs.	1 lb. 14 ozs.	2 lbs. 4 ozs.
Wgt. of Head	1 lb. 4 ozs.	1 lb. 8 ozs.	1 lb. 12 ozs.
Black, per doz.	$13.00	14.00	15.00

Size	4s	6s	8s
Wgt. with handle	2 lbs. 8 ozs.	3 lbs.	3 lbs. 10 ozs.
Wgt. of Head	2 lbs.	2 lbs. 8 ozs.	3 lbs.
Black, per doz.	$15.80	18.00	21.00

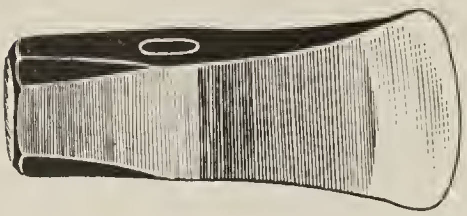
NAIL SETS



Assorted Sizes

No. 435R—Consists of Twelve (12) Nail Sets as described above in a cardboard box. Four 2-32 Inch, Six 3-32 Inch and Two 4-32 Inch; Net Weight per Assortment 1¼ Pounds

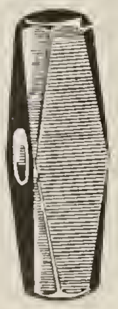
Per assortment $2.50



WOOD CHOPPERS MAULS

Oregon Pattern, Eye for Double Bit Axe Handle. Made for Single Bit Axe Handle on Special Order. No. 122.

5-Pound Maul, each	$1.70
6-Pound Maul, each	1.90
7-Pound Maul, each	2.20
8-Pound Maul, each	2.30



STRIKING OR DRILLING HAMMER

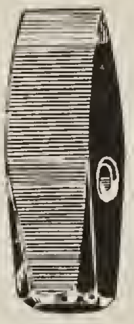
No. 126 Short Patterns. Solid Cast Steel Oil Finish.

4-pound hammer, each	$1.10
6-pound hammer, each	1.30
8-pound hammer, each	1.70
10-pound hammer, each	1.85
12-pound hammer, each	2.20

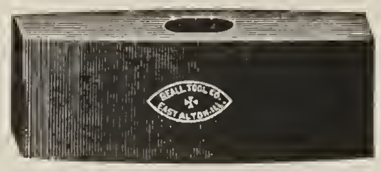
STONE SLEDGE

Solid cast steel, oil finish, polished flat face. No. 131.

8-pound sledge, each	$1.80
10-pound sledge, each	1.85
12-pound sledge, each	2.15
14-pound sledge, each	2.55
16-pound sledge, each	2.90
18-pound sledge, each	3.40
20-pound sledge, each	3.80
24-pound sledge, each	4.50

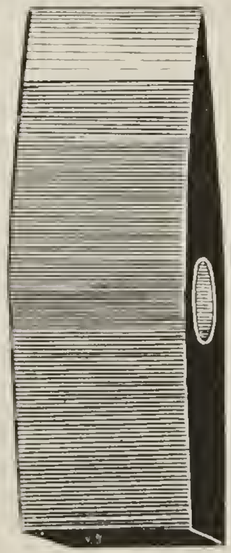


SPALLING HAMMER



Solid Tool Steel Oil Finish Double Faced. No. 130.

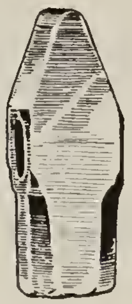
10-pound hammer	$2.50
12-pound hammer	3.00
14-pound hammer	3.40
16-pound hammer	3.90



MASON'S HAMMER

Solid cast steel, bronzed body. Polished ends. No. 128.

4-pound	$1.70
5-pound	2.10
6-pound	2.30
7-pound	2.60
8-pound	2.95
9-pound	3.30
10-pound	3.70



ENGINEER'S HAND HAMMER

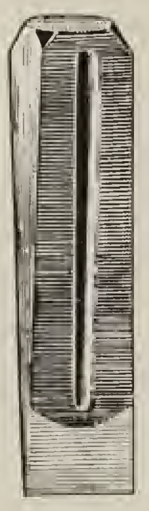
No. 135. Hand forged, non-rusting, black finish. Cross Pein.

1½-pound	$ .90
2-pound	.90
2½-pound	1.00
3-pound	1.00
4-pound	1.00

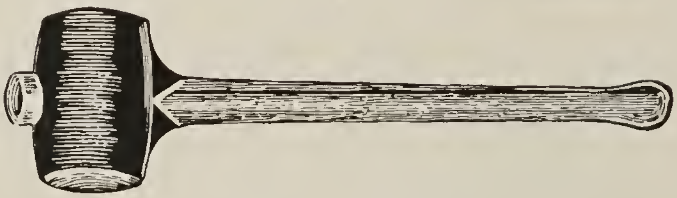
SQUARE HEAD WEDGE

No. 80. Oil Finished. Solid Steel.

3-pound, each	$ .39
4-pound, each	.52
5-pound, each	.65
6-pound, each	.78
7-pound, each	.91
8-pound, each	1.04

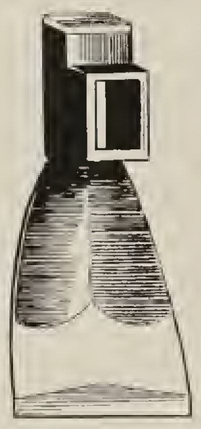


POST MAULS



Cast Iron. Solid Face

Size, lbs.	13	16	18	20
With handle, each	$2.00	2.30	2.50	2.80



CARPENTER ADZ

Cut from 3½ to 4½ inches. Net weight each, 3⅝ pounds. No. 10R. Half head.

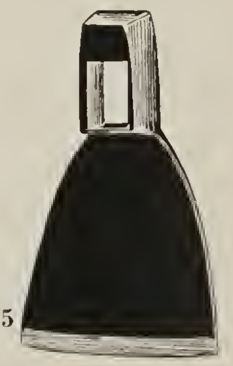
List Price, each $3.00

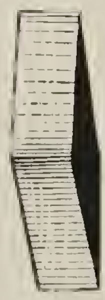
RAILROAD ADZ

No. 11R. Cut 5 to 6 inch. Weight each, 4 pounds.

Full Head

List Price, each $3.35



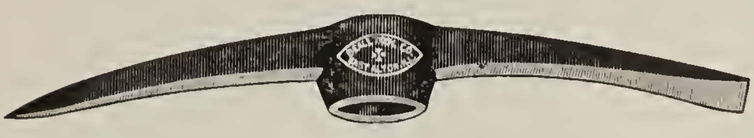


STONE AXE

Solid Tool Steel, Oil Finish, without teeth. No. 145.

8-pound axe	$3.50
9-pound axe	3.90
10-pound axe	4.40

RAILROAD PICKS



High-grade crucible steel; adz eye; polished points.

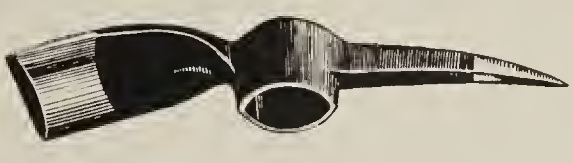
No. 30 Standard

Weight, Pounds	6	7	8
List Price, dozen	$14.50	$15.50	$17.00

No. 31 with 1½ inch chisel end

Weight, Pounds	6	7	8
List Price, dozen	$15.50	$16.50	$18.00

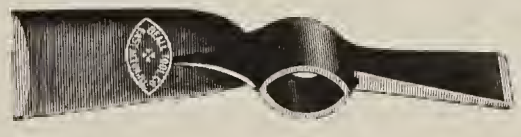
PICK MATTOCKS



Japanned; soft steel body; adz eye; laid steel bits, No. 2.

Weight Pounds	5	6
List Price, dozen	$16.00	$17.00

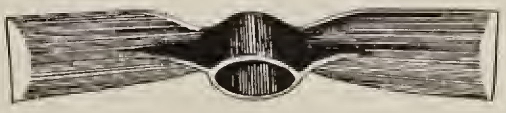
CUTTER MATTOCKS



Short cutter; Japanned; soft steel body; adz eye; Laid steel bits.

Stock Sizes	List Per Doz.	Blade	Cutter
5 lbs.	$16.00	2½, 3 and 3½ ins. wide,	4¾ ins. long
6 lbs.	17.00	3 and 4 ins. wide,	5¼ ins. long

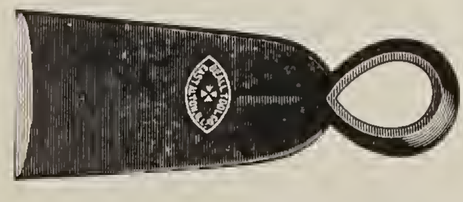
BRUSH MATTOCKS



Japanned Steel Polished Points.

Stock Sizes	List Per Doz.	Blades	Length
6 lbs	$18.00	3½ ins. wide	18½ ins.

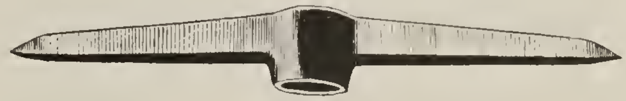
GRUB HOES



No. 20	List Per Doz.	Blade	Length
3 lbs.	$12.00	3¼ ins. wide	10½ ins.
3½ lbs.	$13.00	3¾ ins. wide	10¾ ins.
4 lbs.	$15.00	4 ins. wide	11¼ ins.

Japanned; cast steel body; adz eye; laid steel bit.

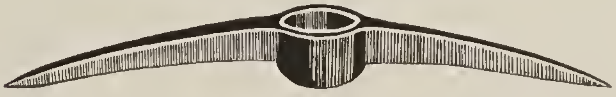
No. 43 CONCRETE PICK



Eye No. 3 Heavy Double Point

Sizes Manf'd	List Per Doz.	Average Length
7 lbs.	$18.50	22 ins.
8 lbs.	19.50	24 ins.
9 lbs.	21.50	25½ ins.

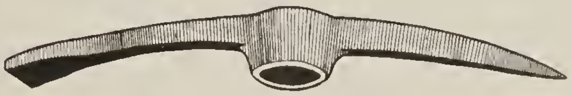
No. 42 CONTRACTORS' PICK



Eye No. 3. Point and Chisel Ends.

Sizes Manf'd	List Per Doz.	Average Length
7 lbs.	$18.50	25 ins.
8 lbs.	19.50	26 ins.
9 lbs.	21.50	27 ins.

TAMPING PICKS



Made to Railroad's Blue Prints and Specifications.

No. 60 RAILROAD TAMPING PICK

Eye No. 3. V Shape Tamper

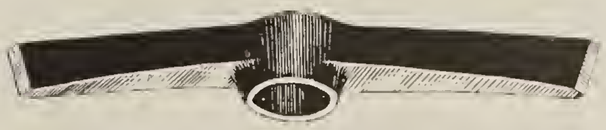
Stock Sizes	List Per Doz.	Length	Tamper
7 lbs.	$18.50	24 ins.	2½ ins. wide
8 lbs.	19.50	25 ins.	2½ ins. wide

No. 61 RAILROAD TAMPING PICK

Eye No. 3. T Shape Tamper.

Sizes Manf'd	List Per Doz.	Length	Tamper
7 lbs.	$18.50	24 ins.	2½ ins. wide
8 lbs.	19.50	25 ins.	2½ ins. wide

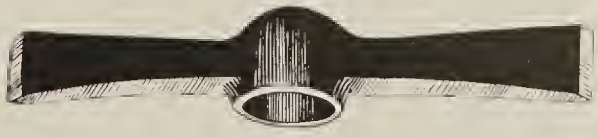
No. 6 ASPHALT MATTOCK



Single eye. Handle enters eye one direction only.

Stock Size	List Per Doz.	Blades	Length
9 lbs.	$25.00	2¾ to 3 ins. wide	21 ins.

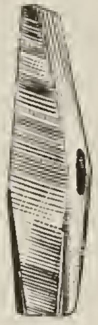
No. 7 ASPHALT MATTOCK



Double or reversible eye. Handle enters eye in either direction.

Stock Size	List Per Doz.	Blades	Length
10 lbs	$35.00	3 ins. wide	20 ins.

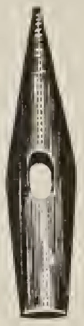
Our Steel Workers Tools are carefully forged and tempered. We use a very high grade steel noted for its toughness. Our Tools are guaranteed against flaws or workmanship. Order from us and you can buy everything in your entire line.



SIDE SET OR BUSTER

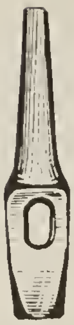
Made from 1½ inch steel,

List price, each $2.50



CONSTRUCTION CHISEL

Built to please the steel worker. List price, each $2.50



BACKING OUT PUNCH

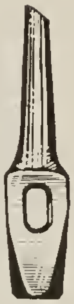
Made from 1½ inch steel, weight about 3 pounds,

List price, each $2.50

GOUGE

¾ inch round at point,

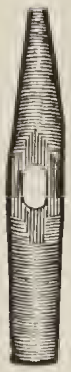
List price, each $2.50



RIVETING HAMMER

Forged from 1½ inch square steel. Weight approximately 4 pounds,

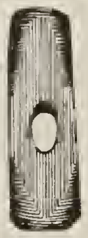
List price, each $4.50



BUTTON SETS

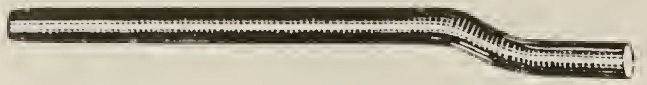
Cupped for ½", ⅝", ¾", ⅞" and 1" rivets.
½", ⅝", ¾",

Each, list price $4.00



⅞" and 1",
List price, each $5.00

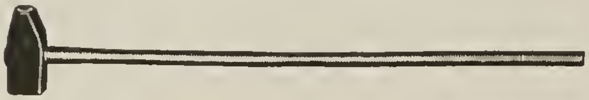
DOLLY BAR



Made from 2" round steel 3 feet long, with offset or gooseneck. End cupped for rivet ⅝", ¾" or ⅞".

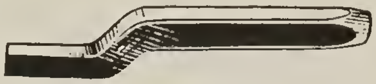
List price, each $7.00

HOLDING ON SLEDGE



Spring Dolly with 4 foot steel handle. Cupped for ¾ or ⅞ inch rivet,

List price, each $8.00

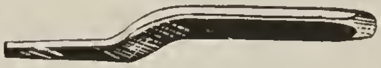


CALKING CHISEL

Made from ⅞" octagon tool steel. With blade ⅞" wide and 2" long, and varying in thickness from ¼ to ¾ inches.

List price, each $1.00

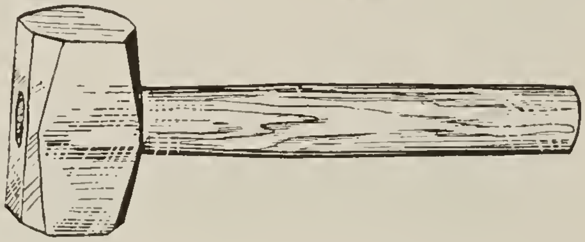
YARNING TOOL



Made from ⅞" qr. oct. Tool steel with blade ⅛" thick, 4" long.

List price, each 1.10

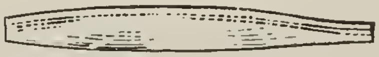
CALKING HAMMER



Made from tool steel in weights from 2½ to 4 lbs. Complete with handle.

2½ pound Hammer	$2.50
3 pound Hammer	3.00
3½ pound Hammer	3.75
4 pound Hammer	4.00

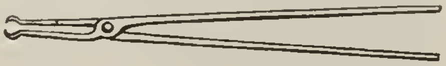
DRIFT PINS



Forged from a very hard and tough grade of steel in the following standard sizes:

Size of steel	7/16"	9/16"	11/16"	13/16"
Length	6"	6½"	7"	7½"
Each	.10½	.12	.15	.18
Size of steel		15/16"	1 1/16"	1 3/16
Length		8"	8½"	9"
Each		.22½	.36	.45

RIVET TONGS

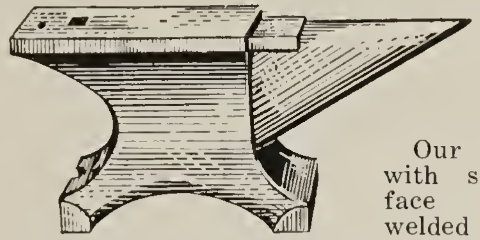


Made in two sizes, 18" and 30" long.

18", List price, each $1.75
30", List price, each 2.25

For handles on above tools, see page 82.

ANVILS

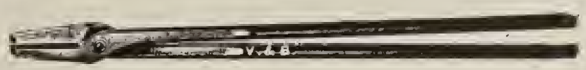


Our Victor Anvil, with solid tool steel face tempered and welded to body.

Untempered steel covered horn. Made in 75, 100, 125 and 150 pound weights.
List price, per 100 lbs. $40.60

Semi-steel Anvil. Just what you need for ordinary work. Not built to stand severe work. Made in 100 and 150 lb. sizes.
List price, 100 lb. Anvil $16.00
List price, 150 lb. Anvil 24.00

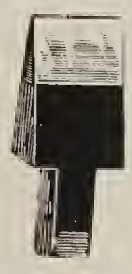
BLACKSMITH'S TONGS



Drop forged steel; straight lip; oil finish.

Nos.	18	20	22	24
Length, inches	18	20	22	24
Weight, Pounds	2	2½	3	3½
List price, each	$1.45	$1.55	$1.60	$1.70

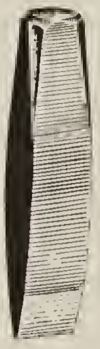
BLACKSMITH HARDIES



Forged steel, oil finish.

Nos.	1313	1314
Shank inches	⅞	1
Weight, pounds	1½	1¾
Each	$1.20	$1.30

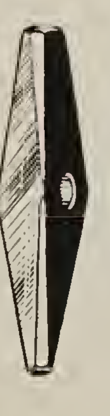
COLD CUTS



Cold cutting, forged steel, oval eye, oil finish.

Nos.	1290	1291	1292
Bit, width, in.	1¼	1⅜	1½
Weight, lbs.	2	2½	3
Each	$1.55	$1.70	$2.00

HOT CUTS



Hot cutting; forged steel; oval eye; oil finished.

Nos.	1300	1301	1302
Bit, width, ins.	1¼	1⅜	1½
Weight, lbs.	2	2½	3
Each	$1.55	$1.70	$2.00

BLUE KNIGHT GRINDER

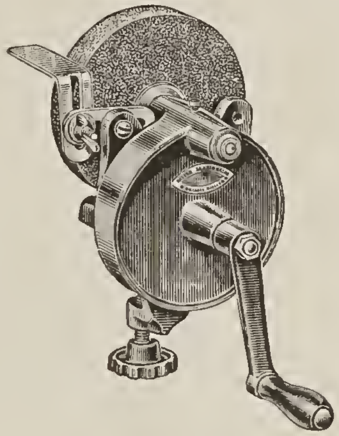
Model E
Machine Spur Cut Gears

Gear pinion is housed in a long one-piece bearing which prevents jamming of gears, as is often the case where gear case is split type, the two halves being held together by screws.

Equipped with Genuine Carborundum Abrasive Wheels.

Model	Wheel	Weight	List
E	3½x¾x5/16	4¼ lbs.	$3.00

Model J

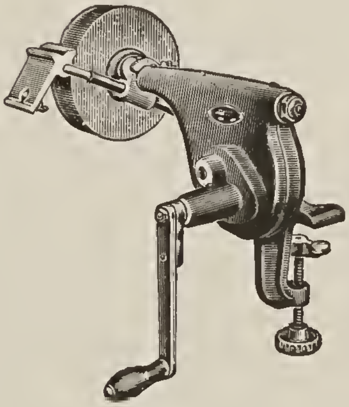


Machine-cut Gears.

Each size has an individual gear case, with large gear, long bearings, heavy pinion and crank shaft, all built proportionate with the size of the grinding wheel.

Gear pinion is housed in a long one-piece bearing; crank shaft has bearing at each end.

Model	Wheel	Weight	Price
J4	4 x ⅞ x 5/16	5½ lbs.	$3.00
J5	5 x 1 x ⅜	8¾ lbs.	3.80
J6	6 x 1 x ⅜	11 lbs.	5.20
J7	7 x 1 x ½	13½ lbs.	7.00

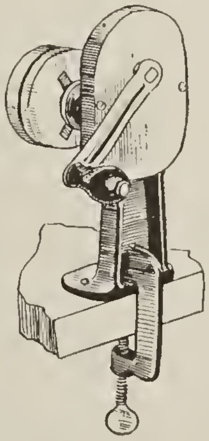


Model A

A high-speed multi-geared grinder for carpenters and mechanics.

Steel gears are heat treated and hardened. Extra heavy oil tight, one-piece gear case. Long steel adjustable handle, nickel plated.
List price $10.00

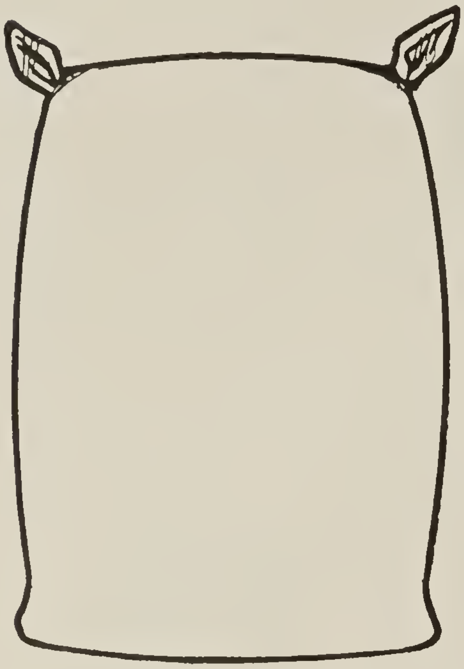
Little Gem



For scissors, shears, sickles, screwdrivers, etc. Can be clamped to a projecting surface or screwed to wall.

List price $1.50

PURITAN BLACKSMITH COAL



Puritan Blacksmith Coal. Try these simple tests on the coal you are now using:

1—Take several pieces the size of your fist and break them open. If little white scales or brown deposits appear between the layers, they are sulphur. It is bad for any iron or steel, and absolutely prevents making good welds. Puritan Smithing Coal contians no such white scales or brown deposits, because it is absolutely free from sulphur.

2—Look at the coke formed around the edge of the fire. If it is not solid and of a clear gray color, the coal contains a large quantity of sulphur. Puritan Smithing Coal forms a clear gray coke, of even grain, which when burned over, makes a hot steady fire.

3—A blue edge around the flame indicates a large amount of the injurious sulphur. Puritan Smithing Coal, being practically free from sulphur, makes a pure red and yellow flame.

4—Look closely at your coal-pile and see how many pieces of dull gray slate you can pick out, just from the surface of the pile. Slate is not coal. It will not burn itself, and it keeps even the coal with which it is mixed from burning freely. Puritan Smithing Coal is not slate. It is pure coal.

Puritan always gives satisfaction; always the same; once used you will have no other.

Puritan Blacksmith Coal, 200-lb. sacks ....Per sack **$4.00**

STEEL BARS

Round

Square

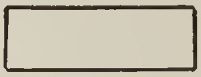
ROUND STEEL BARS

Size, In.	Length, Feet	Wt. per 100 Ft., Lbs.,	Extra Cwt.	Size, In.	Length, Feet	Wt. per 100 Ft., Lbs.,	Extra Cwt.
3/16	12	9	2.00	1⅛	14, 18	338	Base
¼	12	17	1.00	1¼	14, 18	417	Base
5/16	12	26	.70	1⅜	18	505	Base
⅜	12, 16, 18	38	.40	1½	18	601	Base
7/16	12, 16, 18	51	.30	1⅝	18	705	Base
½	12, 16, 18	67	.20	1¾	18	818	Base
9/16	12, 16, 18	84	.15	2	18	1068	Base

SQUARE STEEL BARS

Size, In.	Length, Feet	Wt. per 100 Ft., Lbs.,	Extra Cwt.	Size, In.	Length, Feet	Wt. per 100 Ft., Lbs.	Extra Cwt.
¼	12	21	1.00	1⅛	14	430	Base
5/16	12	33	.70	1¼	12, 14	531	Base
⅜	12, 14	48	.40	1⅜	14	643	Base
½	14	85	.20	1½	16	765	Base
⅝	14	133	.10	1¾	18	1041	Base
¾	14	191	Base	2	18	1360	Base

FLAT STEEL



Size, In.	Length, Feet	Wt. per 100 Ft., Lbs.	Extra Cwt.	Size, In.	Length, Feet	Wt. per 100 Ft., Lbs.	Extra Cwt.
¼x ½	14	43	0.90	½x1¼	16	212	Base
¼x ⅝	14	53	.60	½x-½	12, 16	255	Base
¼x ¾	14	64	.40	½x1¾	12, 16	298	Base
¼x ⅞	14	74	.30	½x2	12, 16	340	Base
¼x1	14	85	.15	½x2½	12, 16	425	Base
¼x1⅛	14	96	.15	½x2¾	16	468	Base
¼x1¼	14	106	.15	½x3	12, 16	510	Base
¼x1⅜	14	117	.15	½x3½	16	595	Base
¼x1½	14	128	.15	½x4	12, 16	680	Base
¼x1¾	14	149	.15	½x4½	12, 16	765	Base
¼x2	14	170	.15	½x5	12, 16	850	Base
¼x2¼	14	191	.15	⅝x1¾	12, 16	372	Base
¼x2½	14	213	.15	⅝x2	12, 16	425	Base
¼x2¾	14	234	.15	⅝x2¼	16	478	Base
¼x3	14,16	255	.15	⅝x2½	12, 16	531	Base
¼x3½	14	298	.15	⅝x3	12, 16	638	Base
¼x4	16	340	.15	⅝x3½	16	744	Base
¼x4½	14	383	.15	⅝x4	16	850	Base
¼x5	14	425	.15	⅝x4½	16	956	Base
¼x6	16	510	.15	⅝x5	16	1063	Base
⅜x ⅝	14	80	.40	⅝x6	16	1276	Base
⅜x ¾	14	96	.30	¾x1½	16	383	Base
⅜x1	14	128	Base	¾x1¾	16	446	Base
⅜x1⅛	14	143	Base	¾x2	16	510	Base
⅜x1¼	14	159	Base	¾x2¼	16	576	Base
⅜x1⅜	14	175	Base	¾x2½	16	638	Base
⅜x1½	12, 16	191	Base	¾x3	16	765	Base
⅜x1¾	12, 16	223	Base	¾x3½	16	893	Base
⅜x2	12, 16	255	Base	¾x4	16	1020	Base
⅜x2¼	16	287	Base	¾x4½	16	1148	Base
⅜x2½	12, 16	319	Base	¾x5	16	1275	Base
⅜x2¾	16	351	Base	¾x6	16	1530	Base
⅜x3	12, 16	383	Base	1 x1¾	16	595	Base
⅜x3½	12, 16	446	Base	1 x2	16	680	Base
⅜x4	12, 16	510	Base	1 x2½	16	850	Base
⅜x4½	16	574	Base	1 x3	16	1020	Base
⅜x5	12, 16	638	Base	1 x3½	16	1190	Base
⅜x6	16, 18	766	Base	1 x4	16	1360	Base
½x ¾	14	128	.30	1 x5	16	1700	Base
½x1	16	170	Base				

BLACK DIAMOND TOOL STEEL

A general purpose tool steel for marble and quarry tools, drills, axes, hammers, etc.

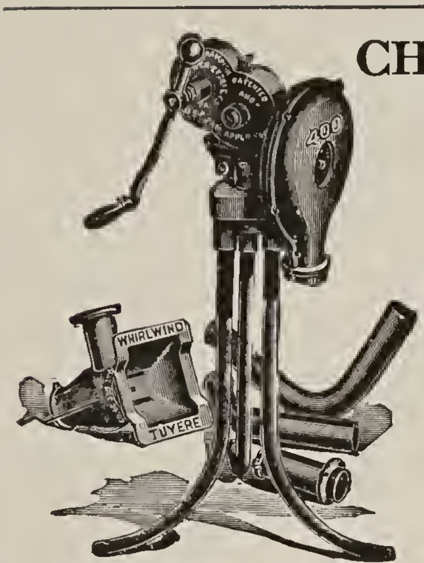
Octagon—Stock Sizes.

Size, Ins.	Wt. per 100 ft., lbs.	Extra per 100 lbs.	Size, Ins.	Wt. per 100 ft., lbs.	Extra per 100 lbs.
¼	18	300	⅞	225	Base
5/16	29	200	1	294	Base
⅜	41	100	1⅛	372	Base
7/16	56	100	1¼	460	Base
½	74	50	1⅜	557	Base
⅝	115	Base	1½	663	Base
¾	166	Base	2	1178	Base

Round—Stock Sizes.

Size, Ins.	Wt. per 100 ft., lbs.	Extra per 100 lbs.	Size, Ins.	Wt. per 100 ft., lbs.	Extra per 100 lbs.
¼	17	300	⅞	204	Base
5/16	26	200	1	267	Base
⅜	38	100	1⅛	338	Base
½	67	50	1¼	417	Base
⅝	104	Base	1⅜	505	Base
¾	150	Base	1½	601	Base

CHAMPION BLOWER AND FORGES

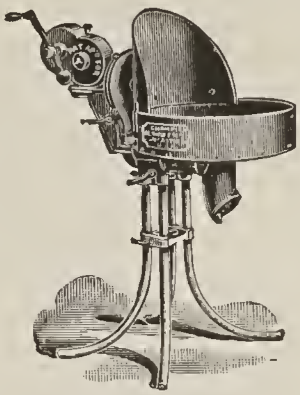


Famous 400

The Blower that has revolutionized blacksmiths' hand fires and made blacksmithing profitable. Adjustable ball bearings throughout. Crank turns either way. The 400 represents the highest grade materials and workmanship. Over one million in use all over the world.

The 400 Whirlwind Blast Anti-Clinker Heavy Nest Tuyere Iron is furnished with the 400 without extra cost.

Diameter of Fan, inches	**12**
Weight, pounds	**160**



No. 401 Forge

No. 401 Champion Steel Rivet Forge has been on the market over 20 years and is used by the great majority of railroads, bridge-builders, boiler and structural iron workers of the world. Constructed from structural steel, making it strong and durable. Its gearing is the 400 Champion High-Speed Spiral Gearing. It runs noiseless. Highest grade adjustable ball bearings. Quickly taken apart and assembled. Produces blasts to weld 3½- to 4-inch iron in ten minutes.

No. 401 Champion Steel Rivet Forge with Shield, Hearth 18 inches in diameter, height 30 inches, Fan 9 inches in diameter. Weight 135 lbs.

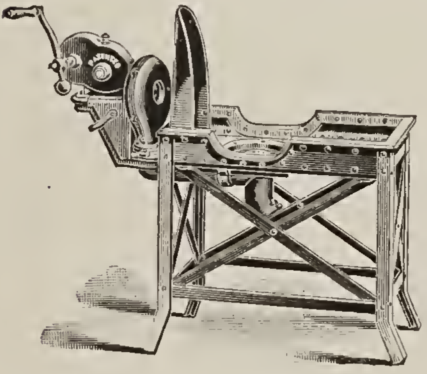
No. 401½ Champion Steel Forge with Shield, Hearth 22 inches in diameter, Fan 9 inches in diameter. Weight 145 lbs.

No. 404 Champion Steel Rivet Forge has 24-inch square hearth, with angle steel legs riveted to the hearth.

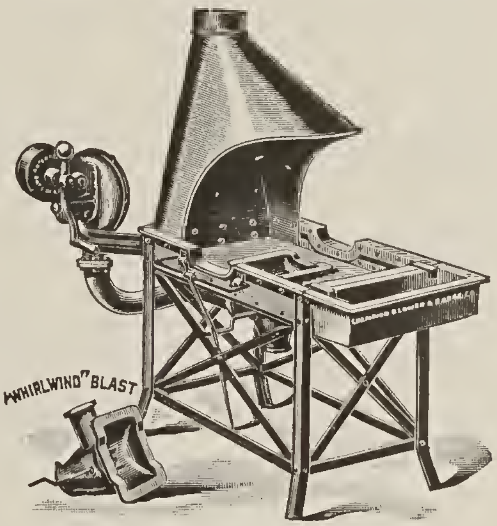
No. 404 Champion Steel Rivet Forge with Shield, Hearth 24 x 24 inches, height 30 inches, Fan 9 inches in diameter. Weight 160 lbs.

No. 408 Champion Steel Blacksmiths' Forge is the 400 Champion Steel Blacksmith Blower built with heavy steel plate and structural steel with perpendicular sides full 6 inches deep; braced and constructed in the most substantial manner. This Forge is sold with our highest recommendations for all purposes in the blacksmith line.

No. 408 Champion Steel Blacksmiths' Forge with Half Hood, Hearth 30 x 36 inches, height 30 inches, Fan 12 inches in diameter, with No. 400 Champion Whirlwind Blast Anti-Clinker Heavy Nest Tuyere Iron. Weight 300 lbs. Water Tank, Extra.



No. 404 Forge



No. 408 Forge

No. 50 Champion One-Fire Variable Speed Electric Blower is built for high pressure blast on the same lines as our Steel Pressure Power Blowers.

No. 50 Champion One-Fire Variable Speed Electric Blower is furnished with a Universal Motor wound for both alternating and direct current, either 110 or 220 volts, and with detached rheostat, with six speeds, which is convenient for setting up the Blower, as the rheostat can be placed wherever desired by the operator.

No. 50 Champion One-Fire Variable Speed Electric Blower with attachment cord and plug for general Blacksmith work. Weight 60 lbs.

No. 51 Champion One-Fire Variable Speed Electric Blower with attachment cord and plug, only half size larger for Extra Heavy Blacksmith work. Weight 70 lbs.

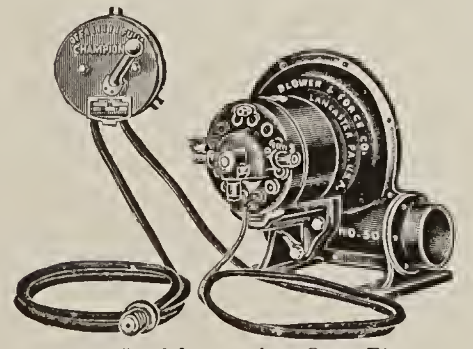
Over a million Whirlwind Blast Anti-Clinker Heavy Nest Tuyere Irons sold to users.

The Whirlwind Blast Anti-Clinker Heavy Nest Tuyere Iron produces a circular, rotary blast; will not blow the heat or hot air up and out of the chimney; less blast is wasted 6 inches above the tuyere than 4 feet above any other tuyere iron; concentrates the blast and heat in the tuyere nest, thus makes a hotter fire and heats the iron one-third quicker.

Saves at least one-half the heating elements. Is supplied with a revolving pick to pick the clinkers out of the side slots.

No. 400 Champion Whirlwind Blast Anti-Clinker Heavy Nest Tuyere Iron is 5 inches deep, 8¾ inches wide and 10½ inches long, over all 12⅜x14¾ inches. Weight 60 lbs.

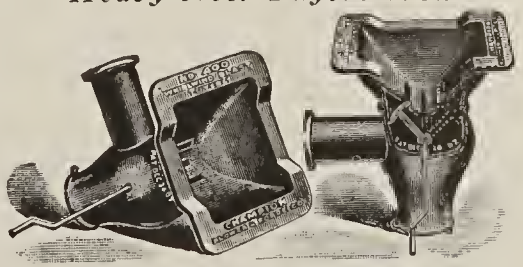
Champion Direct Connected Electric Blower


CHAMPION
BLOWER & FORGE CO.
LANCASTER, PENNA.

No. 50 Blower for One Fire

No. 145 Champion Geared Forge

No. 400 Champion "Whirlwind" Blast Anti-Clinker Heavy Nest Tuyere Iron



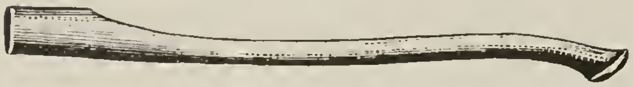
For General Blacksmiths
A Tuyere Iron that makes a "Whirlwind" Blast

AXE HANDLES
Dictator Brand

Octogon shaped eye, scroll end, single bit Axe handle. Select second growth hickory.

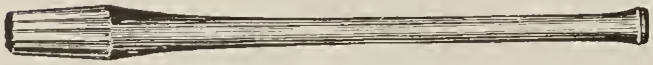
List price, 36 inch handle, dozen $12.00

OVAL SINGLE BITTED AXE HANDLE
Dictator Brand



Oval eye, scroll end, polished select second growth hickory.
36 inch handle, dozen $12.00

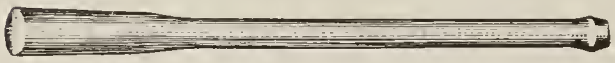
DOUBLE BITTED AXE HANDLE
Dictator Brand



Octogon eye, double-bitted Axe handle, select second growth hictory.
36 inch handle, dozen $12.00

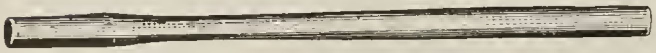
Oval shaped eye, double-bitted Axe handle, select second growth hickory.
36 inch handle, dozen $12.00

PICK HANDLE
Dictator Brand



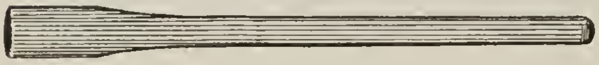
Railroad Pick or Mattock handle. Select second growth hickory.
36 inch handle, dozen $13.00

SLEDGE HANDLE
Dictator Brand



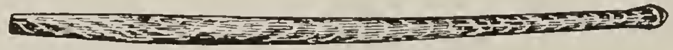
Handle for the Sledge, Maul or Adze. Select second growth hickory.
36 inch handle, dozen $10.00

POST MAUL HANDLES
Dictator Brand



Selected second growth hickory.
List price, 36 inch handle, dozen $6.50

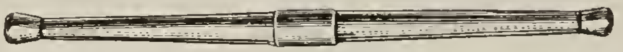
CANT HOOK AND PEAVY HANDLES



Five foot handle, 2¾-inch diameter, polished selected hickory.

Per dozen $16.30

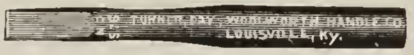
TIMBER CARRIER



Four feet long 2½-inch diameter, second growth hickory.

List price, per dozen $15.00

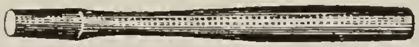
NAIL HAMMER HANDLES



TURNER, DAY & WOOLWORTH HANDLE CO.
LOUISVILLE, Ky.

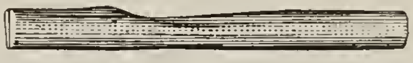
Made in four sizes, 12, 13, 14, and 15 inch.
List price, dozen $3.35

MACHINISTS' HAMMER HANDLE



12, 13, 14, 15 inch handle.
List price, dozen $3.35
16 inch, dozen 3.60
18 inch, dozen 4.05

HATCHET HANDLES



Select hickory stock. Made in four sizes, 12, 13, 14, and 15 inch.

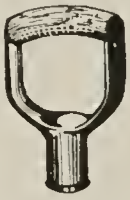
Per dozen $3.35

FOR SKELTON SHOVELS

Chucked, ready to use, with rivets.

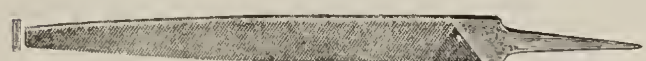
Nos.	S1082	S1083
Grade	XX	XX
Handle	Split D	Long
Per dozen,	$10.50	$10.00

MALLEABLE "D'S" ALL STEEL



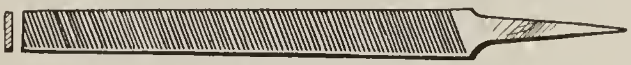
Malleable iron frame and grip.
No. 10, each .... $ .25

FILES



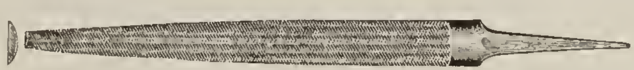
Flat Bastard

Size, inches	4	5	6	8	10	12	14	16
No. in pkg..	12	12	12	12	6	6	6	6
List doz.	$3.70	3.90	4.39	5.30	7.00	9.70	13.30	17.80



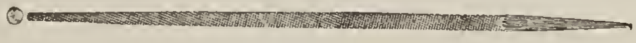
Mill Bastard

Size, inches	4	5	6	8	10	12	14	16
No. in pkg..	12	12	12	12	12	6	6	6
List doz.	$3.00	3.20	3.50	4.30	5.60	7.50	10.70	14.70



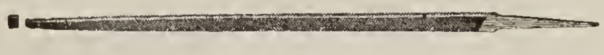
Half Round Bastard

Size, inches	4	5	6	8	10	12	14	16
No. in pkg..	12	12	12	12	6	6	6	6
List doz.	$4.80	5.40	6.10	7.50	9.10	11.80	15.50	20.60



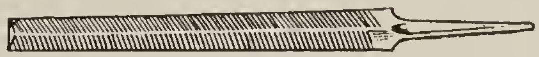
Round Bastard

Size, inches	4	5	6	7	8
Diam., inches	⅛	$\frac{3}{16}$	$\frac{7}{32}$	¼	$\frac{9}{32}$
No. in package	12	12	12	12	12
List per doz.	3.09	3.20	3.50	3.90	4.30
Size, inches	9	10	12	14	16
Diam., inches	$\frac{5}{16}$	⅜	½	⅝	¾
List per doz.	$4.90	5.60	7.50	10.70	14.70



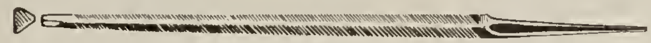
Square Bastard

Size, inches	4	5	6	8	10	12	14	16
Size, sq. in.	⅛	$\frac{3}{16}$	$\frac{7}{32}$	$\frac{9}{32}$	⅜	½	⅝	¾
No. in pkg..	12	12	12	12	12	6	6	6
List doz.	$3.50	4.10	4.60	5.50	7.40	10.20	13.90	18.70



Cant Saw

Size, inches	6	8	10
No. in package	12	12	12
List per dozen	$5.40	6.40	8.70



Slim and Extra Slim Taper

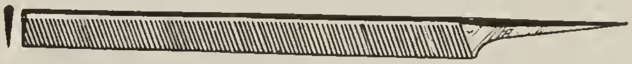
Slim Taper Prices

Size, inches	3	3½	4	4½	5
No. in package	12	12	12	12	12
List per doz.	$2.10	2.10	2.20	2.30	2.50
Size, inches	5½	6	7	8	10
No. in package	12	12	12	12	12
List per doz.	.90	3.10	3.80	4.50	6.40

Extra Slim Taper Prices

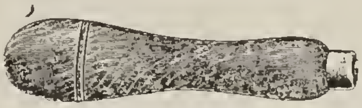
Size, inches	4	4½	5	5½	6
No. in package	12	12	12	12	12
List per dozen	2.20	2.30	2.50	2.90	3.10

CROSS CUT SAW FILES



Size, inches	8	10
No. in package	12	12
List per dozen	$7.50	$9.10

FILE HANDLES



Hardwood; nickel-plated ferrule; assorted sizes in a box.

No. 630—Regular sizes, list price, each...... .06
No. 72—5x1½ inches, list price, each....... .10
No. 73—4¾x1⅜ inches, list price, each..... .08

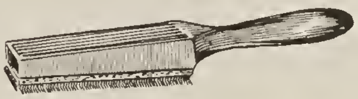
IRON FILE HANDLE

Malleable Iron Handle; Clamp and Screw

Tinned handle, clamp and screw, length 5 inches.

No. 13—List price, each .... .25

FILE BRUSHES

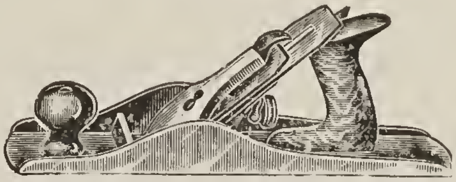


No. 2 Nicholson Hardwood Block

With black bristles on one side, steel wire bristles on other side.

Each $1.50

PLANES



Gray iron body, black enamel finish, polished bottom and sides; tempered crucible steel cutter; parts interchangable with other planes.

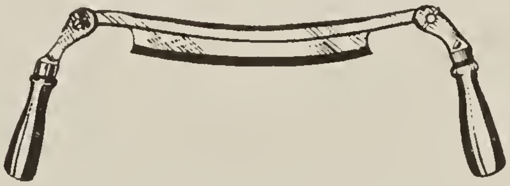
Plain Bottom Smooth

Nos.	504	505
Length, inches	9	14
Cutter, inches	2	2
Weight, pounds	4	5
Each	$3.00	$3.70

Corrugated Bottom Smooth

Nos.	504C	505C
Length, inches	9	14
Weight, pounds	2	2
Cutter, inches	4	5
Each	$3.20	$4.00

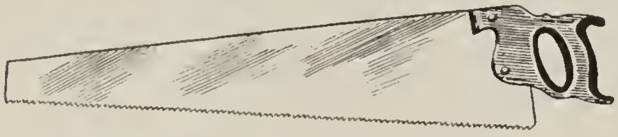
FOLDING HANDLE DRAWING KNIVES



Blade full 1¼ inches wide, finely polished; 3¾ inch cherry stained polished handles reinforced with nickeled steel ring; shanks and wings are of malleable iron; joint made by taper lug on shank fitting in tapered slots on blade extension, insures rigidity and easy adjustment, locked with wing nut. When open handles are held firmly in place, when closed wooden handles fold over blade providing protection.

No.	RC8F	RC9F
Blade, inches,	8	9
Each	$4.80	$500

HAND AND RIP SAWS

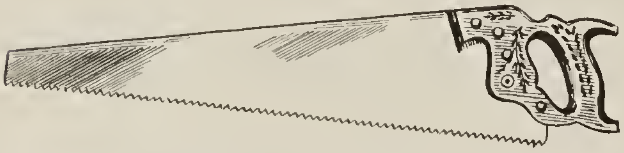


K. C. Clipper; cast steel; polished blade; skew back; Perfect temper, beech handle, four brass saw screws.

	PANEL		HAND
Nos.	110-18P	110-20P	110-26H
Length, inches	18	20	26
Points to inch	8, 9	8, 9	7, 8, 9, 10
Weight, pounds	13	16	25
Per dozen	$17.00	$19.00	$23.00

	RIP
Nos.	110-26R
Length, inches	26
Points to inch	6
Weight, pounds	26
Per dozen	$23.00

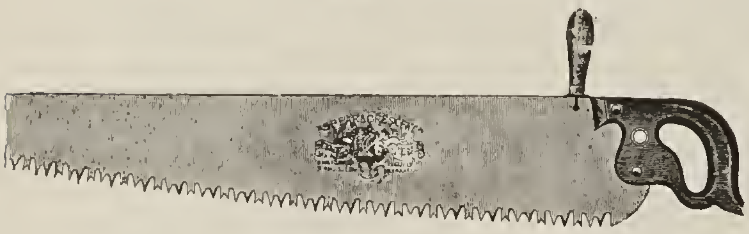
DISSTON'S HAND SAWS



Diston's; spring steel blade, patent ground, polished edge; polished applewood handle; five brass screws.

	Hand	Rip	
Nos.	D8-26H	D8-26R	D8-28R
Length, inches	26	26	28
Points to inch	7, 8, 9, 10, 11	5½, 6	5, 5½, 6
Weight, pounds	25	26	28
Per dozen	$60.00	$60.00	$68.00

DISSTON'S ONE-MAN CROSS-CUT SAWS



Disston's; champion tooth, spring steel; beech handle, four brass saw screws, supplementary handle.

Nos.	1D-3	1D-3½	1D-4	1D-4½	1D-5
Length, feet	3	3½	4	4½	5
Weight, pounds	3¾	4	5½	6	6½
List price, each	$4.80	$5.60	$6.40	$7.20	$8.00

All styles of cross cut saws; catalogue on request.

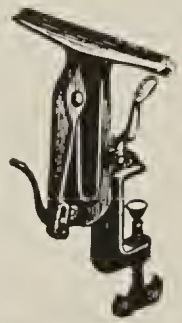
SAW CLAMPS

A light and durable clamp, 9½ inch jaws; 3 dozen in a case. Weight, each, 2¾ lbs.

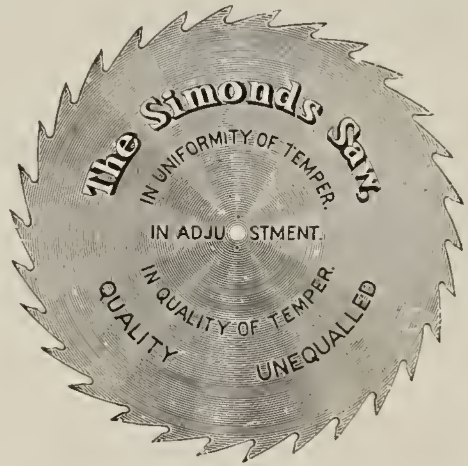
No. 09½J . . . . Per doz., $14.50

May be readily adjusted from Bench or adjusted to light while filing; 9½ inch jaws; 2 dozen in a case. Weight, each 4 lbs.

No. 39½J . . . . Per doz., $20.00



SIMONDS' SOLID TOOTH CIRCULAR SAWS


The Simonds Saw
IN UNIFORMITY OF TEMPER.
IN ADJUSTMENT.
IN QUALITY OF TEMPER.
QUALITY UNEQUALLED

Diameter, Inches	Thickness Gauge	Size Hole. Inches	List Price Each	Extra for Each Gauge Heavier	Beveling New Saws, Per Gauge
6	18	¾	$ 3.30	$ 0.07	$0.25
7	18	¾	4.40	.07	.25
8	18	⅞	4.40	.10	.35
9	17	⅞	5.60	.10	.35
*10	16	1	5.60	.20	.45
11	16	1	7.00	.20	.45
*12	15	1	7.00	.30	.55
*14	14	1⅛	8.50	.40	.65
*16	14	1⅛	10.00	.50	.75
18	13	1¼	12.50	.60	.90
20	13	1 5/16	15.00	.75	1.05
22	12	1 5/16	17.50	.90	1.20
24	11	1⅜	20.50	1.05	1.35
26	11	1⅜	24.00	1.25	1.55
28	10	1½	28.00	1.50	1.75
30	10	1½	32.00	1.75	1.95
32	10	1⅝	36.50	2.00	2.15
34	9	1⅝	41.00	2 25	2.35
36	9	1⅝	47.00	2.60	2.55
38	9	1⅝	51.00	3.00	2.75
40	9	2	62.00	3.40	2.95
42	8	2	71.00	3.80	3.25
44	8	2	83.00	4.40	3.55
46	8	2	98.00	5.15	3.85
48	8	2	112.00	5 90	4.15
50	7	2	127.00	6.65	4.45
52	7	2	142.00	7.40	4.80
54	7	2	157.00	8.80	5.15
56	7	2	180.00	10.25	5.50
58	7	2	200.00	11.75	5.95
60	6	2	224.00	13.25	6.40
62	6	2	250.00	14.75	6.85
64	6	2	280.00	17.60	7.35
66	6	2	310.00	22.00	7.85
68	5	2	350.00	26.40	8.45
70	5	2	400.00	30.80	9 05
72	5	2	450.00	35.20	9.65
74	5	2	510.00	39.60	10.30
76	5	2	575.00	44.00	11.00
78	5	2	690.00	49.85	11.85
80	5	2	810.00	55.75	12.90
82	5	2	940.00	63.05	14.10
84	5	2	1,075.00	70.40	15.40

No extra charge for saws one gauge thicker than list.

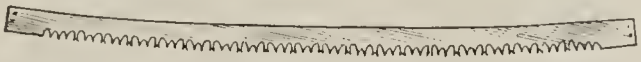
No extra charge for saws one, two or three gauges thinner than list; when more than three gauges thinner, add 5% to list for each gauge. Circular Saws 48 inches and larger, thinner than 10 ga, are not warranted.

Circular Saws 42 inches or less in diameter beveled one gauge without extra charge; 44 inches or larger, beveled two gauges without extra charge.

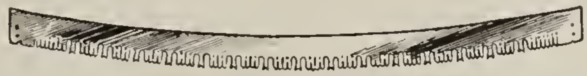
*NOTE:—10, 12. 14 and 16-inch Cross-cut and Rip Saws carried in stock. Balance factory shipment only.

CROSS-CUT SAWS

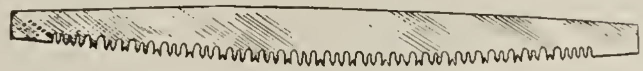
Made of High Grade Special Steel, carefully tempered for satisfactory service. Handles are not included but can be purchased extra.



Economy Hollow Back Tuttle Tooth Cross-Cut Saw. Blade is 3¼ ins. wide at ends and middle. Wgt. 3¾ lbs.
No. E50—5½ ft., each $3.00

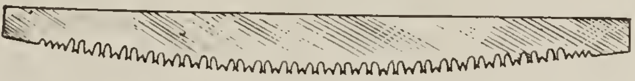


Lance Tooth Pattern, Atkins Quality. Blade is 3¼ ins. wide at ends and middle. Wgt. 4 lbs.
No. 386—5½ ft., each $5.72



Lone Star. Special Steel, 14x18 gauge. Diamond tooth.

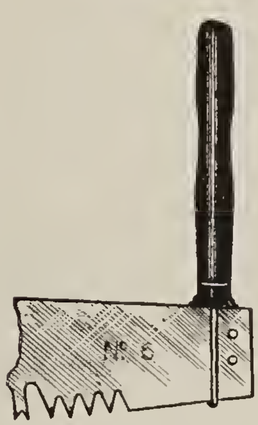
Nos.	223A	223B
Length, ft.	5½	6
Wgt. each, lbs.	5¼	5¾
Each	$9.00	$9.90



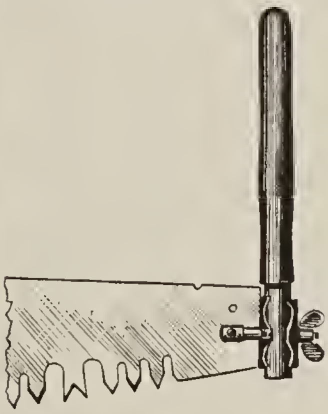
Tuttle tooth, Diamond Point Special Steel, 14x18 gauge. Wgt. 8 lbs.
No. 330—6 ft., each $8.00

Above prices do not include handles.

CROSS-CUT SAW HANDLES



No. 8



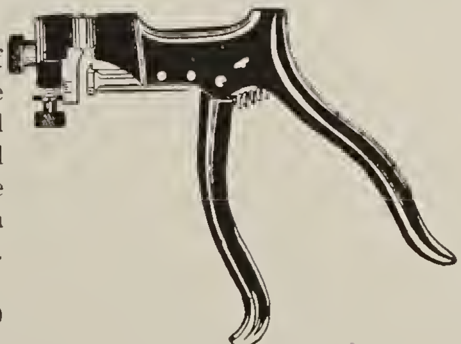
No. 22

No. 8 has malleable castings and swivel washer cast to socket. Spot electric welded loop of high tensile strength, cold drawn steel, japanned black. Specially selected air-dried hardwood stock. 10 ins. long.

No. 22 has extra large wings to prevent casting from slipping. Japanned black. Specially selected air-dried hardwood stock 14 ins. long.

Nos.	8	22
Per pair	.90	.76

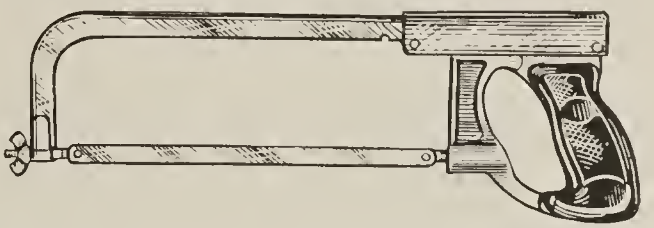
"PISTOL GRIP ADJUSTABLE SAW SET



The construction of this set enables the user to operate the tool with ease. Saw is held firmly against the gauge while the tooth is being set. Wgt., 1 lb.

No. 42—Each, . . . $3.20

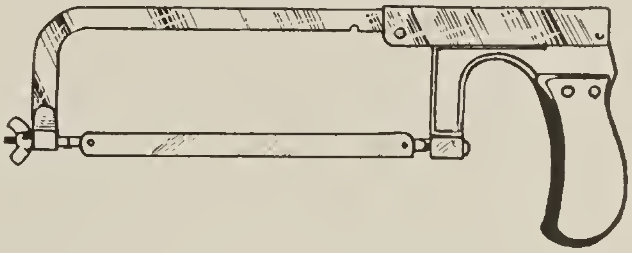
STEEL HACK SAW FRAMES



This frame is the strongest and finest of the Threadwell Line. Made of extra heavy steel with all joints electrically welded and finished in polished nickel and lacquer.

Extension Frame	Capacity (Depth of Cut)	Frame Size
8 to 12"	3¼"	3/16x¾"

No. 5—List price, per doz. $15.00

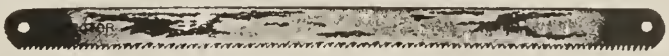


A very high quality pistol grip frame at low cost. Employing the same patented means of frame adjustment as used in the No. 5.

Extension Frame	Capacity (Depth of Cut)	Frame Size
8 to 12"	3¼"	3/16x⅝

No. 4—List price, per doz., ... $9.00

STAR HACK SAW BLADES



All Hard Hand. Gauge 23 (.025)

Star; 18 teeth; natural finish; for sawing iron or steel

Nos.	S18-8	S18-10	S18-12
Length, Inches	8	10	12
Width, Inches	7/16	½	½
Factory List, Per Gross	$8.00	$10.00	$12.00

Star; 24 teeth; natural finish; extra fine teeth; for sawing brass and soft metal.

Nos.	S24-8	S24-10	S24-12
Length, Inches	8	10	12
Width, Inches	7/16	½	½
Factory List, Per Gross	$8.00	$10.00	$12.00

Flexible Hand Blades. Gauge 23 (.025)

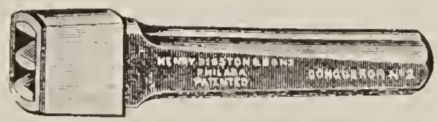
Medium 18 tooth hard edge, for pipe, tubing, etc.

Nos.	SF18-8	SF18-10	SF18-12
Length, Inches	8	10	12
Width, Inches	7/16	½	½
Factory List, Per Gross	$8.00	$10.00	$12.00

Fine 24 tooth hard edge; 23 gauge.

Nos.	SF24-8	SF24-9	SF24-10	SF24-12
Length, Inches	8	9	10	12
Width, Inches	7/16	7/16	½	½
Factory List, Per Gross	$8.00	$9.00	$10.00	$12.00

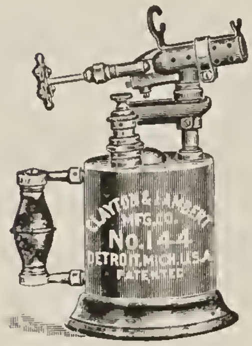
DISSTON SAW SWAGES



Polished forged steel body, with two openings, one with rounded faces for spreading tooth, the other flat for squaring up tooth; bottoms of openings are slotted, making it impossible to injure fine edges of saw teeth. After hardening swages, a blue steel sleeve is driven on. Complete with tooth-filing gauge.

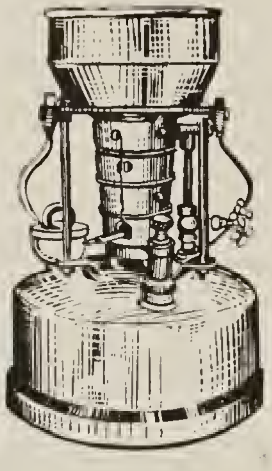
No.	1R	2R	3R
For saws	Large Circular	Circular and Band	Circular and Band
Not thicker than	5 Gauge	10 Gauge	15 Gauge
Length, ins.	5	3¾	2⅞
Each	$8.40	$6.80	$5.50

BLOW TORCHES



No. 158TC&L; for gasoline; quart size; the tank is of brass with funnel-shaped bottom, making it easy to fill and prevents waste of fuel; bronze burner produces a steady blue flame, the gas being superheated as it passes through the long generator vein; the pump forms a part of the handle; the burner hook is removable,
List Price $6.10

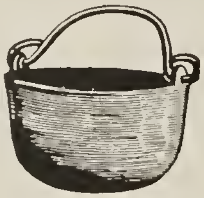
GASOLINE FIRE POTS



Heavy gauge seamless drawn steel tank, tinned inside and out to prevent rust; large funnel and dust proof filler plug; heavy uprights; large bronge valve; cushion protection band at base of tank, heavy malleable top plate; three piece coil cap and top plate enables user to remove top section and expose burner and coils. Fitted with automatic brass pump. Steel wire bail with ebonized wood grip.

No. 22R—Capacity 1 gallon; height 15 ins.; diameter at base 10 ins.; net wt. each 12½ lbs.
Each $15.00

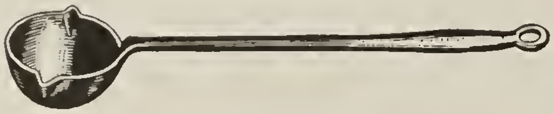
MELTING POTS



Cast iron, wrought iron bail, solid heavy bottom.

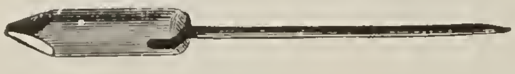
No.	0R	1R	2R
Diameter, ins.	5	6	8
Depth, ins.	3¼	3	4½
Net wt. each, lbs.	4	8	11
Each	$1.00	1.40	2.80

MELTING LADLES



No.	7800A	7800B	7800C	7800D
Bowl, ins.	3	4	5	6
Handle, ins.	12¼	12¼	14¼	15¼
Capacity, lbs.	2	4	7	12
Per doz.	$4.80	5.60	10.30	11.80

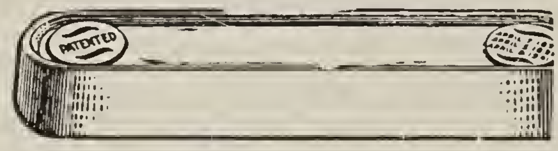
SOLDERING COPPERS



Sharp points, with handles.

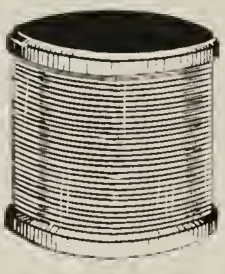
Nos.	1	2
Per Pound	$.74	1.24

SOLDER



Warranted half and half; 50-50, equal parts straight's tin and double refined lead.
50 to 100-pound lots, per pound ..... Market Price
Less than 50-pound lots, per pound ... Market Price

Strictly half and half; 45-55, 45 parts straight's tin and 55 parts refined lead.
50 to 100-pound lots, per pound ..... Market Price
Less than 50-pound lots, per pound ... Market Pirce



ACID CORE

For general soldering and household use; especially suited for automobile repair work, such as radiator leaks, spark plug terminal, cracked fenders, gasoline pipes and tank joints, electrical connections and general garage use. Diameter ⅛ inch; runs about 30 feet to the pound.

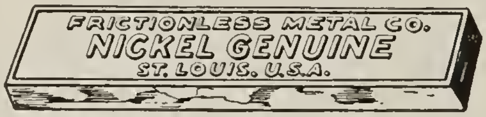
On Spool

No.	H1K	H5K
Spools, lb.	1	5
Per lb.	$1.30	1.20

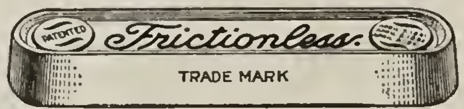
ROSIN CORE

For delicate electrical and radio work where absolutely non-corrosive soldered joints are required; this solder affords the most simple and convenient means for the purpose. Diameter $\frac{3}{32}$ inch, runs about 50 feet to the pound.

No.	H1KR	H5KR
Spools, lb.	1	5
Per lb.	$1.30	1.20

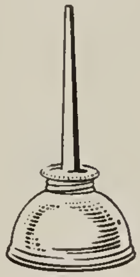

FRICTIONLESS METAL CO.
NICKEL GENUINE
ST. LOUIS. U.S.A.

Our nickel genuine metal has a tensile strength of 13.500 pounds per square inch, and a crushing strength of more than 26,000 pounds per square inch. When you babbitt your bearings with this metal, your bearing troubles are over. It is amalgamated with nickel, which gives the bearings a glazed or polished finish—thus lessening friction and reducing wear.



Frictionless metal is a true anti-friction metal of merit. It is of lead base, toughened with tin and hardened with copper, and has a low coefficient of friction. For general railroad and machine shop purposes, it is unexcelled. Frictionless is almost universal in its application, and will stand high speeds and severe service. It is internationally known, and carries our guarantee of satisfaction.

OILERS



With Straight Spout

Copperized steel tank and spout; polished; spring steel bottom.

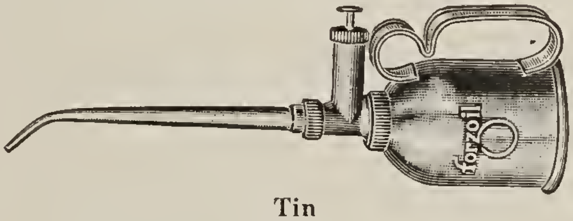
Nos.	13	13A	14A	14AA	15A
Capacity, Pint	⅓	⅓	½	½	1
Diameter, inches	3⅜	3⅜	3¾	3¾	4⅛
Spout, inches	3	5	3	5	5
List price, each	$.25	.30	.35	.40	.45

With Bent Spout

Copperized steel tank and spout; polished; spring steel bottom.

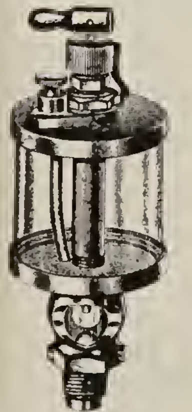
No.	16
Capacity, Pint	1
Diameter, Inches	4¼
Spout, Inches	9
List price, each	$0.50

PRESSURE OIL CAN



No.	Inches. Diam.,	Tin Pints. Capacity,	Inches Spout,	Per Each
351	3	1	8	$2.50
353	4	1½	14	2.75

OILERS
LUBRICATORS

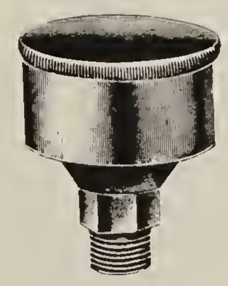


Glass Body; Single Feed for Gasoline and Oil Engine Cylinders

Its design, reliability of operation and extreme durability have established its popularity with users of internal Combustion Engines throughout the world.

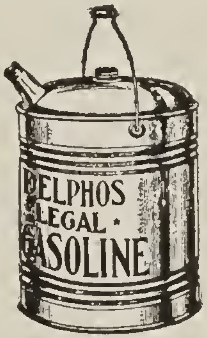
Size ... number	1½	2	3	4
Shank Pipe Thread, inch	¼	⅜	⅜	⅜
Capacity (Oil)	1½	2½	4	5
Finished Bronze	$2.00	$2.80	$3.50	$4.50
Nickel-plated, each	2.40	3.25	4.10	4.60

GREASE CUPS



No.	000	00	0	1	2	3	4
Inside Diameter, in.	¾	1	1¼	1½	2	2½	3
Shank Pipe Thread, in.	⅛	⅛	¼	¼	⅜	½	½
Capacity, Grease	¼	½	⅔	1	2	3½	5
Plain, steel,	72	80	100	120	200	320	420

OIL AND GAS CANS



Legal; gasoline; galvanized steel body and breast; screw can spout; red enameled; wire bail, ebonized bail wood.

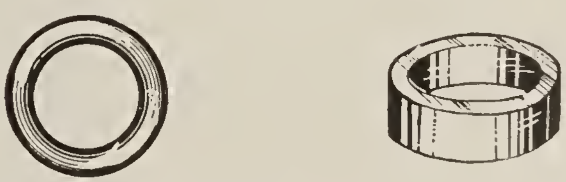
Nos.	501	502	505
Gallons	1	2	5
Weight, per crats, lbs.	20	32	78
List price, each	$0.65	$0.85	$1.40

Steel oil cans; genuinely welded into one piece; no seams or joints anywhere; a 1¼-inch steel hoop welded around the bottom supports the entire weight; height 14½ inches; diameter 11½ inches; nozzle 1¼x2¾ inches; 2½ inch top cap; $\frac{5}{16}$ inch bail; capacity, 5 gallons.

No. 50—Red; for gasoline, list price, each	$3.50
No. 51—Blue; for oil, list price, each	3.50

GAUGE GLASS WASHERS

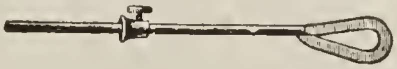
Round **Square**



Gauge Glass Washers furnished in round or square, Packed 1 dozen in a container

Size, inches	½	⅝	¾
Gauge Glass Washers, all sizes, per doz.	$0.44	$0.44	$0.44

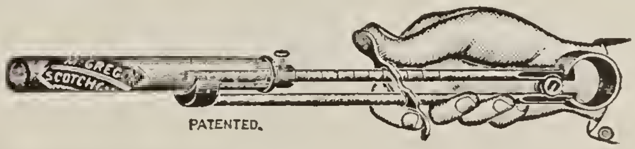
FAVORITE GAUGE GLASS CUTTER



No. 035 Favorite Gauge Glass Cutter. These cutters are thoroughly tested. Packed six in a box

No. 035 Favorite Gauge Glass Cutter .... each $0.30

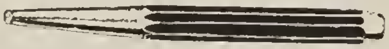
ACME GAUGE GLASS CUTTER



No. 033 Acme Gauge Glass Cutter. Nickel plated. In this cutter the sliding lever can be placed close to the work, and the maximum power obtained and the steel cutting wheel can be used much longer. A handy tool for accurately cutting Scotch Gauge Glass to any desired length.

No. 033 Acme Gauge Glass Cutter ...... List each $2.40

LINING-UP PUNCHES



Hand forged. Full polished blade. Especially useful for lining bolt holes, in assembling machinery.

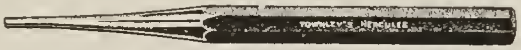
Nos.	4038½	40312	40310	40316	40318
Diam. Stock, ins.	⅝	⅝	¾	⅝	¾
Lengths, ins.	8½	12	10	16	18
Weight, lbs. doz.	7	9½	10½	15	21
Per doz.	$6.60	$8.60	$10.50	$15.70	$19.20

COLD CHISELS

Octagon crucible steel; long bevel; oil tempered; polished bevel and head; rubberoid finish barrel.

Nos.	6TC	8TC	10TC	12TC	14TC	16TC
Cut. Width, in.	⅜	½	⅝	¾	⅞	1
Length, inches	5½	6	7	7½	8	8½
List Price, doz.	$4.80	5.50	6.40	8.70	12.00	16.00

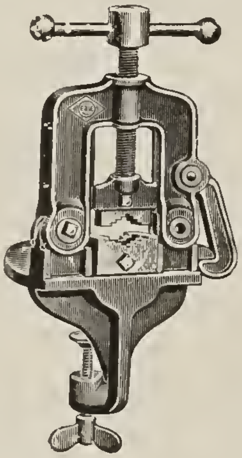
CENTER PUNCHES



Octagon crucible steel; tempered in oil; polished point and head; rubberoid finish barrel.

No.	118T
Steel, Diameter, inch	⅜
Length, inches	4½
List price, each	$0.45

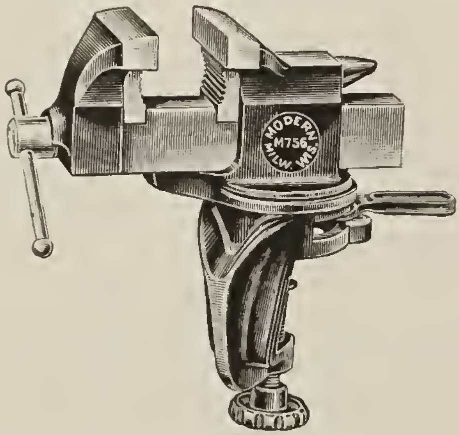
PIPE VISES



Malleable iron frame; japanned; with hinged lock; steel pressure screw; polished removable jaws.

No.	OKT
For Pipe, Inches	⅛ to 2
Weight, Pounds	10
List Price, each	$6.70

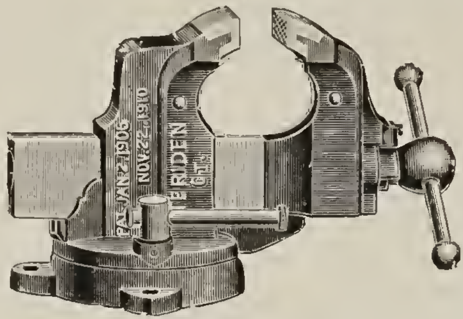
MACHINISTS SWIVEL VISES



Jaws are fitted with removable tool steel jaw faces. Removable pipe jaws that will grip firmly ¼ to 2 in. pipe. Permanently locked collar, absolutely preventing screw slipping. Cold rolled steel screw and handle.

Nos.	43	43½	44
Width Jaws, ins.	3	3½	4
Opens, ins.	3½	4	4½
Wgt., lbs.	14	17	28
Each	$4.30	6.40	10.70

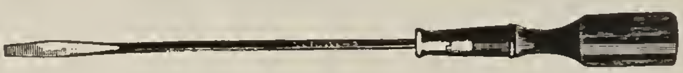
MACHINISTS VISES



A heavy and rugged built vise. Body and jaws made of semi-steel. Jaws have extra depth and ample throat. Faced with a heavy plate of hardened, crucible tool steel. Has swivel base. Can be turned in any position parallel with the bench and securely locked. Base is provided with three holes for bolting to bench.

Nos.	14	15	16	17
Width Jaws, ins.	3½	4	4½	5
Opens, ins	4	5½	6	7
Wgt. lbs.	39	42	57	64
Each	14.50	17.20	20.00	29.00

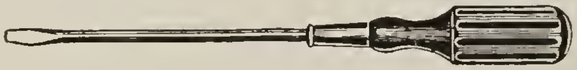
SCREW DRIVERS



Octagon tool steel blade; natural finish; polished bit; nickel-plated steel ferrule; rivet through ferrule; Rubberoid finish hardwood fluted handle.

Nos.	365-1½	365-3	365-4	365-5
Blade Length, Inches	1½	3	4	5
Blade Diameter, Inches	7/32	7/32	¼	5/16
Over All, Inches	4	8	9	10½
List Price, each	.25	.35	.40	.45
Nos.	365-6	365-8	365-10	365-12
Blade Length, Inches	6	8	10	12
Blade Diameter, Inches	5/16	⅜	⅜	7/16
Over All, Inches	12	14	16	18
List Price, each	.50	.70	.90	1.05

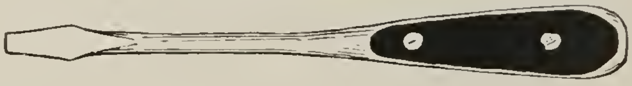
BRIDGEPORT
REGULAR PATTERN, ROUND BLADE



Round forged tool steel blade, polished and tempered; heavy drawn steel ferrule with bead lock; fluted wood handle, dull black finish; blades are fastened securely into handle.

No.	R2093	R2094	R2095	R2096	R2098
Length of blade, ins.	3	4	5	6	8
Net wt. per doz., lbs.	1½	2¼	2½	4	4½
Per doz.	$2.20	2.30	2.50	2.80	3.70

PERFECT HANDLE

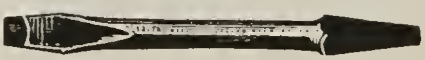


Blade and handle in one piece, drop-forged from special steel, tempered and polished; oval handle, inlaid with waterproofed wood.

No.	R503	R504	R505	R506
Length of blade, ins	3	4	5	6
Net wt. per doz., lbs.	3	4	5	6
Per doz.	$5.10	5.70	6.70	8.00

No.	R508	R510	R512
Length of blade, ins.	8	10	12
Net. wt. per doz., lbs.	10½	11½	12½
Per doz	$10.70	13.30	16.00

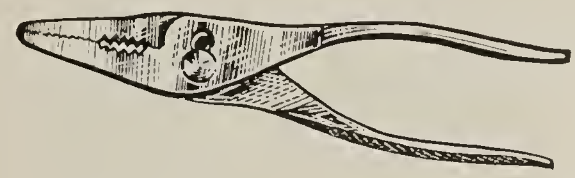
SCREW DRIVER BITS



Made with bits ¼, 5/16, ⅜ in. wide. Lgth. over all, 4½ ins.

No. 360—Assorted .... Per doz., $3.60

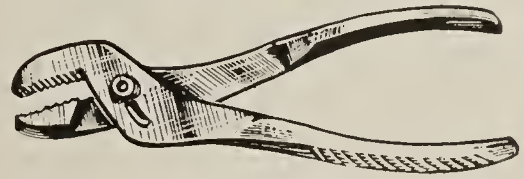
WILDE THIN NOSE PLIERS



Drop forged. Milled teeth. Nose measures 1⅞ ins. in length, tapers to 3/32 in. in thickness at the point. For automobile and electrical repair work. Wire cutter. Knurled handles.

Nos.	2000	2000B
Size, ins.	7″ Nickel Plated	7″ Gun Metal
Per Doz.	$15.80	9.00

WILDE WRENCH PLIER



Drop forged from chrome-nickel steel. Hardened and tempered. Jaws open parallel and grip positively. Jaws have 22 degree angle. Threads will not strip or break. Polished nickel finish.

Nos.	4060	4080
Size, ins	6	8
Jaws open, ins	⅞	1⅛
Per doz.	$16.00	17.60

CUTTING NIPPERS

Acme; Cast steel; polished tool steel interchangeable dovetailed jaws, set screw adjustment; Japanned head and handles; are not made to use as a claw hammer nor for cutting music wire.

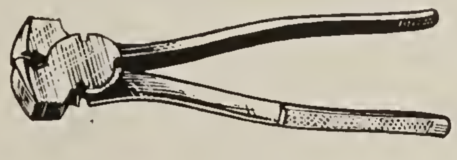
Nos.	4	3	1
Length, Inches	8	10	12
Jaws Open, Inch	3/16	5/16	⅜
Jaws, Width, Inches	1⅜	1½	1⅝
Weight, pounds	1	1½	2
Each	$4.00	4.60	5.50

ACME CUTTING NIPPER JAWS

Crucible Tool Steel, polished; double bevel cutting edge; interchangeable.

Nos.	4AJ	3AJ	1AJ
For Nippers, Nos.	4	3	1
Width, Inches	1⅜	1½	1⅝
Weight, ounces	1	1½	2
Per Pair	$1.30	1.30	1.30

STAPLE PULLERS



A good yet inexpensive staple puller or wire fence tool. Drop forged steel. One head single checked, other double checked. Two wire cutters, pipe grip, wire stretcher. Jaws have two round holes for pulling staples. "No Pinch" knurled handles. Full polished finish.

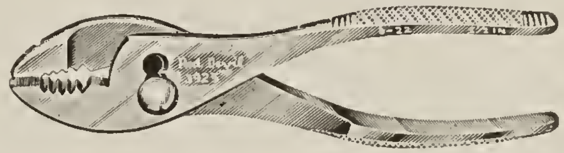
No. 1906—10-in. ....Per Doz., $24.00

ELECTRICIANS STANDARD PLIERS

Forged from high grade steel with spring tempered handles; throat shaped to take small nuts; keen and durable cutting knives; "no pinch" Dentyne knurled, gun metal handles; polished head.

Nos.	50-5	50-6	50-7	50-8
Length, Inches	5	6	7	8
Weight Per Dozen, Lbs.	3	5	6½	10
List Price, each	1.55	1.70	1.85	2.05

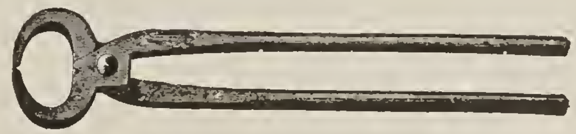
COMBINATION PLIERS



Forged from fine quality steel; hardened and tempered; shear cutter, pipe grip and adjustable jaws; knurled satin finish handles, coppered and nickeled; A tool of excellent value.

No.	RG25	RG26	RG28	RG210
Length, Inches	5	6	8	10
Capacity, Inches	¾	1	1¼	1½
Net weight per dozen lbs.	3	6	7½	12
Per. Doz. (Arb.)	$6.56	$6.56	$9.36	13.20

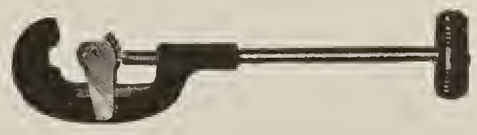
BLACKSMITHS' PINCHERS



Sargent's; cast steel; polished jaws; oil finish handles.

Nos.	52-12	52-14
Length, Inches	12	14
List Price, each	1.50	1.60

PIPE CUTTERS



2 Cutting Wheels

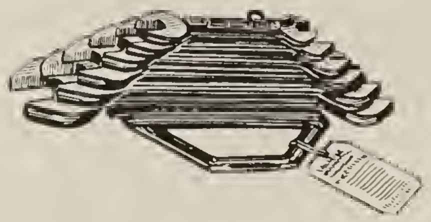
Barnes'; hardened steel frame and screw; drop-forged tool steel wheels; oil tempered; Japanned iron handle.

Nos.	1	2
Length, Inches	13	16
Cuts Pipe, Inches	⅛ to ½	¼ to 2
Factory List	4.50	6.00

3 Cutting Wheels

Nos.	3
Length, Inches	13
Cuts pipe, inches	1¼ to 3
Factory list, each	$15.00

WRENCH SETS



'Fitz-All Engineers'

Consists of six (6) wrenches with twelve different openings from ⅜ to 1 inch; will handle ¼, 5/16, ⅜, 7/16 and ½ inch U. S. Standard nuts; ¼, 5/16, ⅜, 7/16, ½, 9/16 and ⅝ S. A. E. Standard nuts and cap screws. Drop forged of hardened carbon steel parabolic head, narrow jaws, will not spread when subjected to severest service; milled openings; unfinished and tempered.

No. **R2153**—Net wt. per set 2¾ lbs. ......Per set, **$1.26**

Contents

One each of the following lengths, 4, 4¾, 5¾, 6¾, 7½ and 9 inch, contained in an all metal, side hinged positive locking container.

One set in a container.

Vlchek Engineers'

Consists of six (6) wrenches with twelve different openings from ⅜ to 1 inch; will handle ¼, 5/16, ⅜, 7/16 and ½ inch U. S. Standard nuts; ¼, 5/16, ⅜, 7/16, ½, 9/16 and ⅝ S. A. E. Standard nuts and hexagon cap screw sizes from 3/16 to ¾ inch. Made of Chrome Molybdenum, the toughest and finest alloy steel, electrically heated to insure uniform hardness, parabolic designed head; thickness of head, depth of opening, size bar are scientifically and practically correct; each wrench ground, polished and finely nickel-plated with size stamped on each wrench.

No. **R2152**—Net wt. per set 2½ lbs........Per Set, **$3.70**

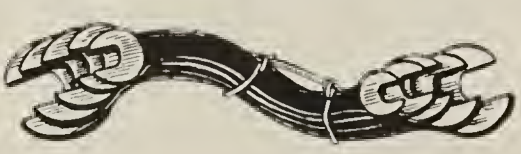
Contents

One each of the following lengths 4, 4¾, 5¾, 6¾ 7½ and 9-inch contained in an all metal, side hinged, positive locking container.

One set in a container.

GENERAL PURPOSE SETS

Vlchek Star "S"



Consists of five (5) drop forged carbon steel double end service wrenches; ten different milled openings of the most popular sizes; each wrench properly hardened; unfinished tempered finish.

No. **R2087**—Net wt. per set 4 lbs. ....Per Set, **$1.70**

Contents

One each of the following numbers assembled in a permanent metal container.

No.	R75B	R77B	R79B	R81B	R83B
Length, ins.	6¼	7¼	8¼	9¼	10⅜
Opening, ins.	⅜, 7/16	½, 9/16	⅝, 11/16	¾, 13/16	⅞, 1
For standard nuts	3/16, ¼	¼, 5/16	5/16, ⅜	⅜, 7/16	7/16, ½

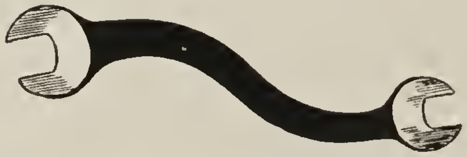
ENGINEERS' WRENCHES

Williams; drop forged; double head; 15 degree angle; semi-finished milled openings for U. S. Standard nuts.

Nos.	Bolt Sizes	Hex. Hd. Cap Screw	SAE Hd. and nut Size Screw	Milled Openings	List Price
21	⅛x3/16	⅛	..	5/16x13/32	.34
23	3/16x¼	5/16	5/16	13/32x½	.42
24	3/16x5/16	..	..	13/32x19/32	.50
25	¼x5/16	5/16	5/16	½x19/32	.50
26	¼x⅜	5/16	5/16	½x11/16	.62
27	5/16x⅜	..	..	19/32x11/16	.62
28	5/16x7/16	..	..	19/32x25/32	.74
29	⅜x7/16	..	..	11/16x25/32	.74
30	⅜x½	⅝	9/16	11/16x⅞	.90
31	7/16x½	⅝	9/16	25/32x⅞	.90
32	7/16x9/16	..	..	25/32x21/32	1.10
33	½x9/16	⅝	9/16	⅞x21/32	1.10
34	½x⅝	⅝	9/16x¾	⅞x1	1.36
37	⅝x¾	1	¾x⅞	1 1/16x1¼	1.92

LIGHT SERVICE WRENCH

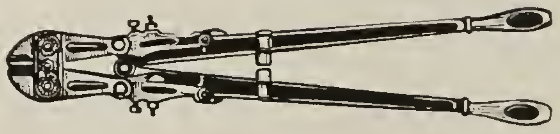
Finished



Drop forged carbon steel case hardened; openings milled surface and edges smoothed; size stamped on heads; baked-on black enameled body, heads bright; 22½ degree angle; double head; long and light.

No.	R75B	R77B	R79C	R81A
For U. S. standard nuts	...	¼	...	½
For hezagon head cap screws	3/16-¼	5/16-⅜	7/16-½	½-⅝
For S. A. E. standard nuts and cap screws	¼	5/16-⅝	7/16-½	½-9/16
Openings milled, inches	⅜-7/16	½-9/16	⅝-¾	¾-⅞
Extreme length, inches	6¼	7¼	8¼	9¼
Thickness, heads, inches	¼	9/32	5/16	⅜
Factory list each	$0.54	$ .68	$ .86	$1.10

BOLT CUTTERS

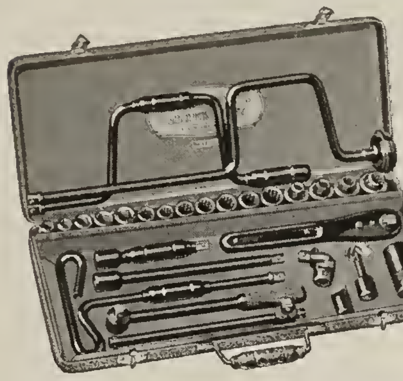


Porter's New Easy; Compound Lever Action; Forged Tool Steel Adjustable Jaws Japanned Malleable Iron Handles; Rubber Buffers; All Parts Interchangeable.

Nos.	0T	1T
Length, Inches	18	24½
Cut Bolts, Inch	5/16	⅜
Cut Soft Steel Rods Inch	¼	5/16
Weight, Lbs.	3	6
Each	$5.50	$7.50

Nos.	2T	3T
Length, Inches	30	36
Cut Bolts, Inch	½	⅝
Cut Soft Steel Rods, Inch	⅜	½
Weight, Lbs.	9	13
Each	$10.50	$13.50

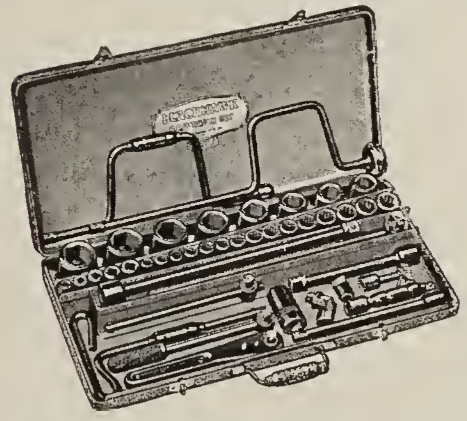
A MASTER MECHANIC'S SET OF SOCKET WRENCHES



Packed in heavy gauge steel case with beautiful two-tone crackle finish of maroon and black. No. 32 C. D.

One each of following: Handles Nos. 911X, 610, 500, T10, T60, T4, 3370 and 110X. Attachments Nos. T1, T2 and T11. Double hexagon sockets, Nos. D14, D16, D18, D19, D20, D21, D22, D24, D25, D26, D28, D30, D31, D32 and D34. Square sockets, Nos. O12, O14, O16, O18, O20. Spark plug socket, No. 136.
No. 32CD $30.35

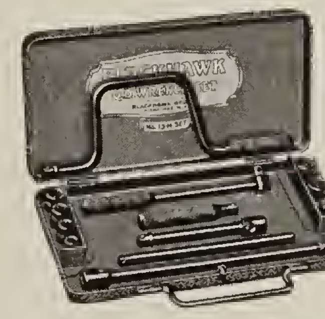
No. 32C Set (with hexagon instead of double hexagon socket) 29.10



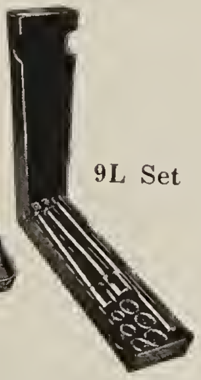
This set for every job-car, truck, tractor, threshers and construction machinery. This set combines the tools of the famous 32CD. Set, with the heavy duty handles and socket in the 35 B. Neatly arranged in the sturdy No. D case with the two-toned red and black crackle finish.

No. 43 D D Set $48.15

No. 43 D Set combines tools of 32C and 35B . . 46.90



13H Set



9L Set

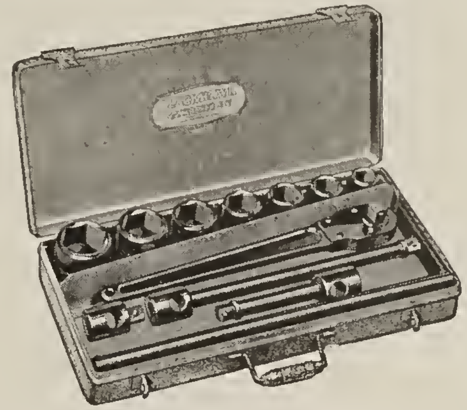
No. 9L Set for those who have use for only a smaller assortment we recommend the No. 9L Set. Consists of one sliding bar handle, two 6″ extension bars and six sockets.

No. 13H Set. This little set of wee handles and tiny double hexagon sockets ideal for use on work in close quarters, such as: Automotive universal joints; oil pump screws and is ideal for aviation work. Set contains 13 tools, one each of items pictured at left.

No. 13H Set—Complete in metal case $11.35

No. 9L Set—Complete in case 5.25

DETACHABLE SOCKET WRENCH SETS



Extra Heavy Duty Set

An industrial service and maintenance set of remarkable strength and adaptability, incorporating the safety feature found only in socket wrenches. All parts are made of highest grade steel. Heat treated to withstand not the ordinary use, but the abusive strains, stresses and constant use to which equipment of this kind is subjected.

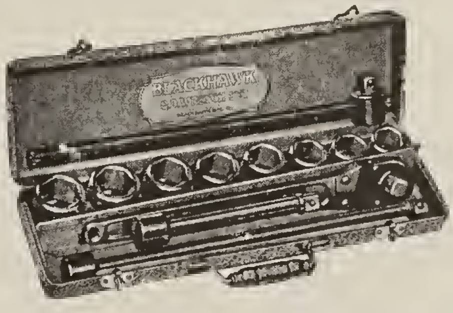
No expense has been spared to make this set the best and safest industrial wrench set on the market. Handles have ⅞″ square shank—sockets ⅞″ square opening for handles.

No. 12E Set Contains One Each

No. 920 Ratchet, 20″ long.
No. T4XX Sliding Bar, 24″ long.
No. T40XX Offset also head for T4XX.
No. T8XX Extension Bar, 9″ long.
No. T17XX Extension Bar, 18″ long.
No. 40XX, 46XX, 52XX, 58XX, 64XX, 70XX, 76XX, Sizes 1¼ to 2⅜″ Sockets.

No. 12E Set—Complete in 2-toned steel case, No. E, Price $58.40

No. 12 Set—Same as 12E but packed in wooden box, Price 49.40



HEAVY DUTY SET

Just the set needed by mechanics who repair trucks, tractors, and farm machinery. A favorite in industrial plants. Those big frozen nuts give up the fight when the mechanic applies one of these husky sockets and powerful handles. Extension bar can safely be used on ratchet where leverage beyond the handle is needed to break loose frozen nuts or bolts. Sockets of special steel, properly heat treated to stand up under constant use. Handles have ¾″ square shank—sockets ¾″ opening for handles.

No. 36B Set Contains One Each:

No. 916 Ratchet, 16″ long.
No. T4X Sliding T, 19″ long.
No. T8X Extension Bar, 8½″ long.
No. T17X Extension Bar, 17″ long.
No. 36X, 38X, 40X, 44X, 46X, 48X, 50X, 52X, Size 1⅛″ to 1⅝″.

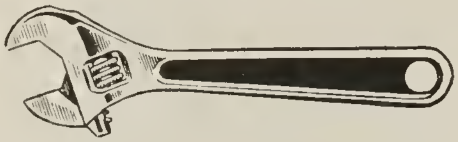
No. 36B—Set complete in two-toned steel case Price $26.30

No. 35B—Set (Same as above less No. 916) Ratchet) Price 17.80

No. 35—Set (Same as 35B except packed in wooden box) Price 13.80

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

CRESCENT SINGLE END



Drop-forged from best carbon steel, heat treated, hardened and oil-tempered; special alloy steel movable jaw; ribbed handle and center web; polished throughout, except web in handle which is black oil finish.

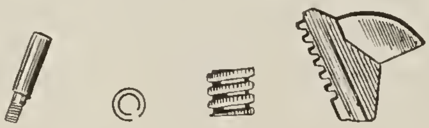
Length, ins	4	6	8	10
Opens, ins.	½	¾	[illegible]/16	1⅛
Net wt. per doz., lbs.	1½	3¾	7½	13½
Per doz.	$11.28	$11.28	$13.92	$17.28

Length, ins.	12	15	18
Opens, ins.	1 15/16	1 11/16	2 1/16
Net wt. per doz., lbs.	24	51½	84
Per doz.	$25.92	$38.88	$55.92

CRESCENT DOUBLE END

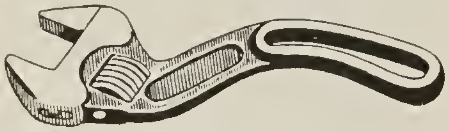
Length, ins.	4	8	10	12
Open, ins.	½ & ¾	¾ & 15/16	15/16 & 1⅛	1⅛ & 1 5/16
Net wt. per doz. lbs	4½	8¼	14¼	27
Per. doz.	$19.20	$21.60	$25.92	$34.32

REPAIR PARTS FOR CRESCENT WRENCH



Size Wrench, ins.	4	6	8	10	12	15	18
Jaws, each	$0.34	.34	.42	.56	.84	1.18	1.60
Knurls, each	.14	.14	.16	.20	.34	.48	.76
Pins, each	.06	.06	.06	.14	.14	.14	.14
Springs, each	.06	.06	.06	.06	.06	.06	.06

ADJUSTABLE S WRENCH

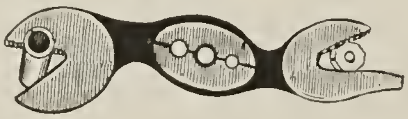


Malleable iron; polished head and jaws; Japanned handle knurled steel adjusting screw.

Length, inches	6	8
Opens, inch	¾	1
Net weight per dozen pounds	5½	12
Per dozen	$10.50	13.20

Length, inches	10	12	14
Opens, inches	1⅜	1⅝	2
Net wt. per doz., lbs.	22	40	58
Per dozen	$16.00	24.00	32.40

ALWAYS READY WRENCH

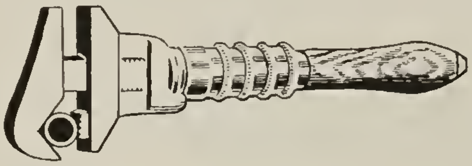


Crocodile; drop-forged carbon steel, hardened natural finish body; polished jaws; milled teeth.

No.	51
Length, inches	8½
Per Dozen	$10.00

Combination nut and pipe wrench; screw-driver and thread cutter. The dies on this wrench will cut the threads on 5/16, ⅜ and ½-inch bolts.

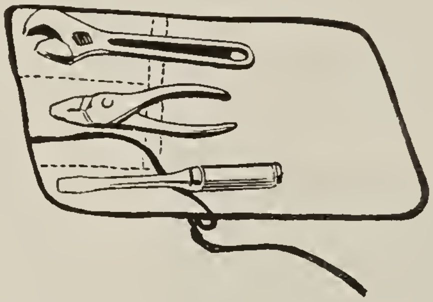
COMBINATION NUT AND PIPE WRENCH



Head, bar and shank one-piece special open-hearth steel, drop-forged; tough malleable iron sliding jaw and long adjusting nut; carbon steel inserted jaw, with superior temper; one-piece selected hardwood handle grip, held in place by ferrule and capped end nut; metal parts smooth finish; bright, polished handle.

Length, inches	12	15
Holds pipe, inches	½ to 1¾	½ to 2
Net weight dozen, pounds	36	55
Factory list, per dozen	$36.00	48.00

CRESCENT TOOL KIT



Set contains one No. A18 Genuine Crescent Adjustable Wrench, size 8 inches. One No. L26 Crescent thin straight nose combination plier, size 6 inches. One No. K24 Crescent screw driver, size 4 inches. In a stout brown duck roll.

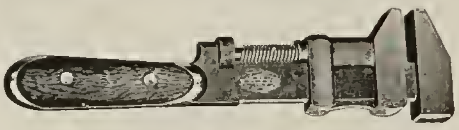
No. TK31, Complete, each $3.08

STRUCTURAL WRENCHES

Drop forged, case hardened, unfinished, with straight opening for U. S. Standard wrought nuts.

No.	R905	R907	R908	R909
Extreme length, inches	11	14⅛	16	17½
For nuts, inch	½	⅝	¾	⅞
Opening, inches	29/32	1 7/64	1 19/64	1½
Thickness head, inch	½	⅝	11/16	¾
Handle offset, inches	1	1⅛	1¼	1 15/16
Net weight, each pounds	1	1¾	2¾	3¾
Each	$1.20	1.70	2.30	3.20

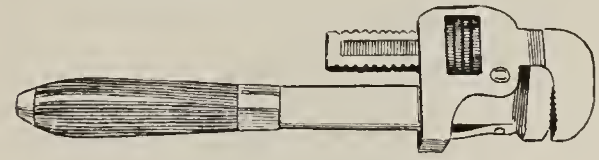
MONKEY WRENCHES



Forged steel, one piece head and bar; hardened semi-steel slide bar; steel screw; keyed hardwood knife handle.

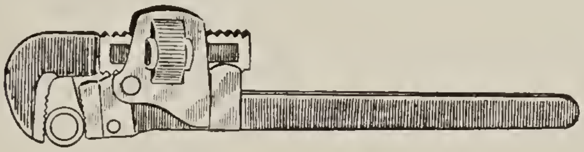
Nos.	6CK	3CK	10CK	12CK	15CK
Length, ins.	6	8	10	12	15
Opening ins.	1	1¼	1¾	2¼	2½
Weight doz., lbs.	11	19	31	48	70
Factory list, doz.	$15.00	18.00	22.00	28.00	38.00

STILLSON PIPE WRENCHES



H & A Red Nut Stillson pattern; forged tool steel; hardened steel teeth; full hand polished finish; black stained hardwood handle.

Length, ins.	6	8	10	14
Pipe, ins.	⅛ to ½	⅛ to ¾	⅛ to 1	¼ to 1½
List	$2.00	2.25	2.50	3.50
Weight lbs.	½	¾	1½	3



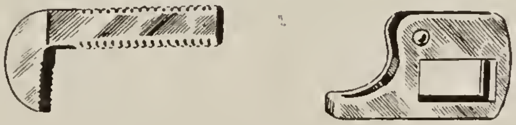
Same as Above Except Steel Handle.

Length, ins.	6	8	10	14
Pipe, ins.	⅛ to ½	⅛ to ¾	⅛ to 1	¼ to 1½
List	$2.00	2.25	2.50	3.50
Weight lbs.	½	¾	1½	3

Length, in.	18	24	36	48
For pipe, ins.	¼ to 2	¼ to 2½	¼ to 4	1 to 5½
Factory list	$5.00	7.25	13.50	20.00
Weight, lbs.	5	8½	16	27

A given size H & A Wrench will not only take that size pipe, but also many standard fittings for that size, due to the extra long screw end of jaw.

STILLSON PIPE WRENCH PARTS

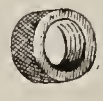


Nos. 6SJ to 48SJ, Nos. 6SF to 48SF, Jaws only.

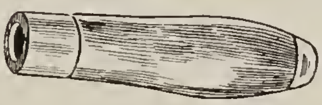
Nos.	6SJ	8SJ	10SJ	12SJ	14SJ
For wrench, in.	6	8	10	12	14
Nos.		18SJ	24SJ	36SJ	48SJ
Factory list	.75	.80	.85	1.10	1.15
For wrench, in.		18	24	36	48
Factory list		$1.75	2.25	4.35	7.50

Frame Only

Nos.	6SF	8SF	10SF	12SF	14SF
For wrench, in.	6	8	10	12	14
Factory list	0.38	.42	.50	.60	.60
Nos.		18SF	24SF	36SF	48SF
For wrench, in.		18	24	36	48
Factory List		0.75	.95	1.70	2.20



Nos. 6SN to 48SN



Nos. 6SH to 14SH

Nuts Only

Nos.	6SN	8SN	10SN	12SN	14SN
For wrench, in.	6	8	10	12	14
Factory list	0.12	.15	.20	.30	.30

Wood Handles Only

Nos.	6SH	8SH	10SH	12SH	14SH
For wrench, ins.	6	8	10	12	14
Factory list	0.16	.16	.18	.25	.25

TRIMO PIPE WRENCHES

Trimo; drop-forged steel; polished head and jaws; Japanned Steel Handle; with inserted jaw.

Nos.	6TW	8TW	10TW	14TW
Length, ins.	6	8	10	14
For pipe in.	⅛ to ½	⅛ to ¾	⅛ to 1	¼ to 1½
Weight, lbs.	½	¾	1¾	3¾
Factory list	$2.00	2.25	2.50	3.50
Nos.	18TW	24TW	36TW	48TW
Length, in.	18	24	36	48
For pipe, in.	¼ to 2	¼ to 2½	½ to 3½	1 to 5
Weight, lbs.	5¼	8¾	17	25
Factory list	$5.00	7.25	13.50	20.00

TRIMO PIPE WRENCH PARTS

Movable Jaws

Nos.	6TJ	8TJ	10TJ	14TJ
For wrench, in.	6	8	10	14
Weight, pound	⅛	¼	½	1
Factory list	0.75	.80	.85	1.15
Nos.	18TJ	24TJ	36TJ	48TJ
For wrench, in.	18	24	36	48
Weight, pound	1⅜	2	4⅜	6¼
Factory list	$1.75	2.25	4.35	7.50

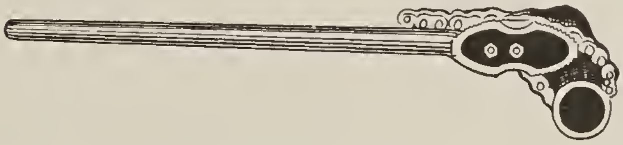
Inserted Jaws with Pins.

Nos.	61J	81J	101J	141J
For wrench, in.	6	8	10	14
Weight, ounces	½	1	2	4
Factory list	0.35	.40	.50	.60
Nos.	181J	241J	361J	481J
For wrench, in.	18	24	36	48
Weight, pound	½	¾	⅞	1
Factory list	0.70	.80	1.10	2.00

PINS ONLY FOR INSERTED JAW

Nos.	6JP	8JP	10JP	14JP
For wrench, inches	6	8	10	14
List	.03	.03	.04	.04
Nos.		18JP	24JP	36JP
For wrench, inches		18	24	36
List		.04	.04	.05

VULCAN BIJAW PIPE WRENCH



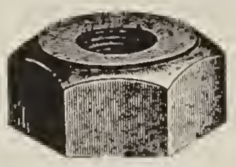
Drop forged steel, with double end reversible jaws with straight cut teeth for turning or holding pipe and pipe fittings from ⅛ to 12 inches in diameter; complete with special proof-tested flat link chain.

Double End Reversible Jaws.

No.	30	31	32	33	33½
For pipe, ins.	⅛ to ¾	⅛ to 1½	¼ to 2½	¾ to 4	1 to 6
Length over all Inches	13¾	20	27	37	44½
Length, Chain, Inches	9½	13½	17½	22½	31
Breaking Strain Chain, lbs.	3600	6700	9800	12500	14300
Net Weight Each, lbs.	2⅜	5¾	10	16	24
Each	$5.00	7.00	10.00	14.00	18.00

No.	34	35
For pipe, inches	1½ to 8	2 to 12
Length over all, inches	50½	64½
Length Chain, inches	39	54½
Breaking Strain Chain, pounds	15700	21600
Net weight each, pounds	31	50
Each	$22.00	36.00

HOT PRESSED NUTS
HEXAGON TAPPED



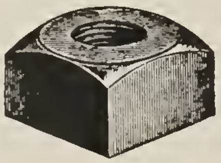
Standard List, adopted April 1, 1927.

U. S. STANDARD THREAD, EXACT SIZE

For bolt, in.	1/4	5/16	3/8	7/16	1/2
Width, in.	1/2	19/32	11/16	25/32	7/8
Thickness, in.	1/4	5/16	3/8	7/16	1/2
Hole, in.	3/16	1/4	19/64	11/32	13/32
Number in 100 lbs.	8,904	5,406	3,180	2,152	1,484
Per hundred	$0 65	90	1 20	1 75	2 25

For bolt, ins.	5/8	3/4	7/8	1
Width, ins.	1 1/16	1 1/4	1 7/16	1 5/8
Thickness, ins.	5/8	3/4	7/8	1
Hole, in.	33/64	5/8	47/64	27/32
Number in 100 lbs.	827	504	326	225
Per hundred	$3 00	4 30	6 80	9 30

SQUARE TAPPED



Standard List, adopted April 1, 1927.

U. S. STANDARD THREAD, EXACT SIZE.

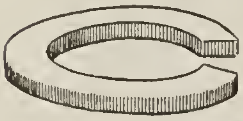
For bolt, in.	1/4	5/16	3/8	7/16
Width, in.	1/2	19/32	11/16	25/32
Thickness, in.	1/4	5/16	3/8	7/16
Hole, in.	3/16	1/4	19/64	11/32
Number in 100 lbs.	7,630	4,558	2,703	1,876
Per hundred	$0 55	75	1 05	1 50

For bolt, in.	1/2	9/16	5/8	3/4
Width, ins.	7/8	31/32	1 1/16	1 3/4
Thickness, in.	1/2	9/16	5/8	3/4
Hole, in.	13/32	29/64	33/64	5/8
Number in 100 lbs.	1,250	970	694	408
Per hundred	$2 00	2 30	2 70	3 80

For bolt, ins.	7/8	1
Width, ins.	1 7/16	1 5/8
Thickness, ins.	7/8	1
Hole, in.	47/64	27/32
Number in 100 lbs.	276	182
Per hundred	$6 10	8 30

About 200 pounds in a keg.

LOCK WASHERS



Plain Pattern furnished in two types, Special Light SAE; and SAE Standard.

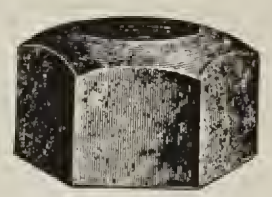
Special Light S. A. E.

Size, Ins.	Size Steel	List per 1,000	Size Ins.	Size Steel	List per 1,000
No. 10	3/64x3/64	3.20	1/2	11/64x1/16	16.00
1/4	3/32x3/64	5.60	9/16	3/16x3/32	24.00
5/16	1/8x3/64	8.00	5/8	13/64x3/32	32.80
3/8	1/8x1/16	10.00	3/4	1/4x1/8	56.80
7/16	5/32x1/16	14.00	7/8	17/64x5/32	102·80

S. A. E. Standard

Size, Ins.	Size Steel	List per 1,000	Size Ins.	Size Steel	List per 1,000
No. 10	1/16x3/64	3.20	1/2	11/64x1/8	24.80
1/4	3/32x1/16	6.00	9/16	3/16x1/8	30.80
5/16	1/8x1/16	8.80	5/8	13/64x5/32	51.60
3/8	1/8x3/32	11.60	3/4	1/4x3/16	92.00
7/16	5/32x1/8	20.80	7/8	17/64x3/16	106.00

COLD PRESSED HEXAGON NUTS
SEMI-FINISHED



Standard List, adopted April 1, 1927.

Tapped and faced true on bottom; chamfered.

U. S. STANDARD THREAD

For bolts, in.	1/4	5/16	3/8	7/16
Width, in.	1/2	19/32	11/16	25/32
Thickness, in.	1/4	5/16	3/8	7/16
Number threads	20	18	16	14
Per hundred	$0 75	1 00	1 35	1 90

For bolts, in.	1/2	9/16	5/8	3/4	7/8
Width, ins.	7/8	21/32	1 1/16	1 1/4	1 7/16
Thickness, in.	1/2	9/16	5/8	3/4	7/8
Number threads	12	12	11	10	9
Per hundred	$2 40	3 30	4 00	5 70	8 75

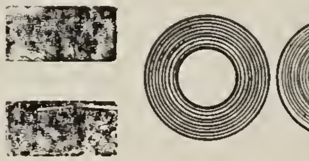
For bolts, ins.	1	1 1/8	1 1/4	1 1/2
Width, ins.	1 5/8	1 13/16	2	2 3/8
Thickness, ins.	1	1 1/8	1 1/4	1 1/2
Number threads	8	7	7	6
Per hundred	$12 00	16 70	22 70	41 90

S. A. E. (ALAM) STANDARD THREAD

For bolts, in.	1/4	5/16	3/8	7/16	1/2
Width, in.	7/16	1/2	9/16	5/8	3/4
Thickness, in.	7/32	17/64	21/64	3/8	7/16
Number threads	28	24	24	20	20
Per hundred	$0 65	75	95	1 30	1 65

For bolts, in.	9/16	5/8	3/4	7/8	1
Width, ins.	7/8	15/16	1 1/16	1 1/4	1 7/16
Thickness, in.	31/64	35/64	21/32	49/64	7/8
Number threads	18	18	16	14	14
Per hundred	$2 50	3 20	5 00	8 00	11 60

WROUGHT WASHERS



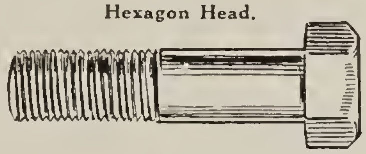
Prices are per 100 lbs.

For Bolt, ins.	3-16	1-4	5-16	3-8	7-16	1-2	9-16	5-8
Diameter, ins.	9-16	3-4	7-8	1	1 1-4	1 3-8	1 1-2	1 3-4
Hole, ins	1-4	5-16	3-8	7-16	1-2	9-16	5-8	11-16
Gauge, No.	18	16	16	14	14	12	12	10
No. in lb.	394	156	112	68	43	26	22	13
Full kegs, (200 lbs.)	$18.90	15.30	13.70	11.90	10.50	9.70	9.50	9.30
100-lb. lots	20.00	16.40	14.80	13.00	11.60	10.80	10.60	10.40
50-lb. lots	20.90	17.30	15.70	13.90	12.50	11.70	11.50	11.30
25-lb. lots	21.90	18.30	16.70	14.90	13.50	12.70	12.50	12.30
Less than 25 lbs	24.50	20.90	19.30	17.50	16.10	15.30	15.10	14.90
For Bolt, ins.	3-4	7-8	1	1 1-8	1 1-4	1 1-2	1 3-4	2
Diameter, ins	2	2 1-4	2 1-2	2 3-4	3	3 1-2	4	4 1-2
Hole. ins	13-16	15-16	1 1-16	1 1-4	1 3-8	1 5-8	1 7-8	2 1-8
Gauge No.	9	8	8	8	8	7	7	7
No. in lb.	9	7.8	5.6	4.7	3.6	2.5	1.9	1.6
Full kegs, (200 lbs.)	$ 9.10	8.90	8.90	8.90	9.30	9.30	9.90	9.90
100-lb. lots	10.20	10.00	10.00	10.00	10.40	10.40	11.00	11.00
50-lb. lots	11.10	10.90	10.90	10.90	11.30	11.30	11.90	11.90
25-lb. lots	12.10	11.90	11.90	11.90	12.30	12.30	12.90	12.90
Less than 25 lbs.	14.70	14.50	14.50	14.50	14.90	14.90	15.50	15.50

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

S. A. E. Cap Screws**

Hexagon Head.



List Per 100.

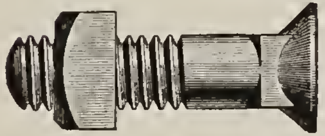
Lgth., ins.	¼	5/16	⅜	7/16	½	9/16	⅝
	Diameter of Screw, ins.						
¾	8.70	9.70	11.60	15.00	19.10	.....	.....
1	9.40	10.50	12.40	15.80	19.90	31.70	32.80
1¼	10.20	11.20	13.40	17.00	21.60	32.20	33.30
1½	10.90	12.00	14.30	18.20	23.00	32.70	33.80
1¾	11.80	13.10	15.70	19.50	24.70	35.00	36.20
2	12.70	14.30	17.00	20.90	26.30	37.10	38.30
2¼	13.60	15.50	18.30	22.40	28.10	39.60	40.80
2½	14.40	16.70	19.60	23.90	30.00	41.70	42.60
2¾	15.20	17.80	21.00	25.30	31.80	44.60	46.00
3	16.10	19.00	22.30	26.80	34.00	47.60	49.10
3½	.....	.....	.....	29.80	38.60	52.40	53.80
4	.....	.....	.....	32.70	43.60	57.20	58.40
Diam. Hd.	7/16	½	9/16	⅝	¾	⅞	15/16
Hgt. Hd.	3/16	15/64	9/32	21/64	⅜	7/16	½
No. Threads	28	24	24	20	20	18	18

Threaded 1½ times the diameter of screw plus ¼ inch.

Packed as follows:

All ¼-inch.......... 100
5/16x¾ to 2½-inch............100
5/16x2¾-inch and longer...... 50
⅜x¾ to 2½-inch............100
⅜x2¾-inch and longer...... 50
7/16x¾ to 2-inch.... 100
7/16x2¼-inch and longer...... 50
½x¾ to 1¼-inch............100
½x1½ to 3¾-inch........... 50
½x4 and longer............ 25
9/16x¾ to 1½-inch............ 50
9/16x1¾-inch and longer...... 25

PLOW BOLTS.
SHORT SQUARE.



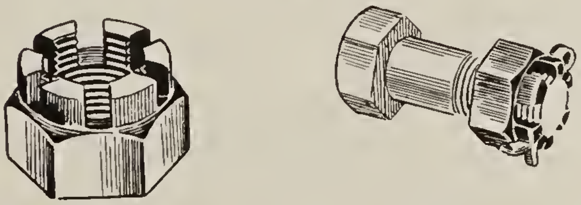
REGULAR HEAD.

No. *H3*—Square neck, round countersunk head.

FACTORY LIST PER HUNDRED.

Length, Inches.	Diameter, Inches. ⅜	7/16	½
¾	$2 45	....	....
1	2 60	$3 55	....
1¼	2 75	3 75	$5 25
1½	2 90	4 00	5 50
1¾	3 05	4 25	....
2	3 20	4 50	6 00
2¼	....	4 75	6 30
2½	3 50	5 00	6 60
2¾	....	....	6 90
3	4 00	....	7 25
3½	....	....	8 25
4			9 60

CASTELLATED NUTS



Drop forged steel, milled, semi-finish.

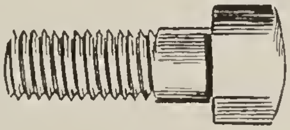
S. A. E. STANDARD

No.	H4	H5	H6	H7	H8
For bolt, in.	1-4	5-16	3-8	7-16	1-2
Thread, No.	28	24	24	20	20
Thickness, ins.	9-32	21-64	13-32	29-64	9-16
Width, ins.	7-16	1-2	9-16	5-8	3-4
Net wt. per 100 lbs.	½	1	2	3	4
Per hundred	$1.40	1.60	1.90	2.40	3.40

No.	H9	H10	H12	H14	H15
For bolt, in.	9-16	5-8	3-4	7-8	1
Thread No.	18	18	16	14	14
Thickness, in.	39-64	23-32	13-16	29-32	1
Width, in.	7-8	15-16	1 1-16	1 1-4	1 7-16
Net wt. per 100, lbs	6 1-2	9 1-2	13 1-2	15	18
Per hundred	$5.00	5.80	9.20	12.70	19.20

U. S. Standard Cap Screws**

Hexagon Head.



List Per 100.

Lgth., ins.	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞
	Diameter of Screw, ins.								
¾	8.70	9.70	11.60	15.00	19.10	....	..	...	...
⅞	9.10	10.00	12.00	15.40	19.50	....	....	....	....
1	9.40	10.50	12.40	15.80	19.90	31.70	32.80	.....	...
1¼	10.20	11.20	13.40	17.00	21.60	32.20	33.30	53.10	....
1½	10.90	12.00	14.30	18.20	23.00	32.70	33.80	53.70	83.00
1¾	11.80	13.10	15.70	19.50	24.70	35.00	36.20	54.30	83.80
2	12.70	14.30	17.00	20.90	26.30	37.10	38.30	54.90	84.60
2¼	13.60	15.50	18.30	22.40	28.10	39.60	40.80	58.00	90.80
2½	14.40	16.70	19.60	23.90	30.00	41.70	42.60	61.10	96.80
2¾	15.20	17.80	21.00	25.30	31.80	44.60	46.00	64.20	103.00
3	16.10	19.00	22.30	26.80	34.00	47.60	49.10	67.40	108.60
3¼	....	.. .	....	28.30	36.40	49.90	51.40	71.60	113.20
3½	....	....	....	29.80	38.60	52.40	53.80	76.00	117.30
3¾	....	....	....	31.30	41.10	54.80	56.20	80.40	121.30
4	....	....	....	32.70	43.60	57.20	58.40	84.50	125.70
4¼	....	....	....	....	....	....	60.80	91.70	134.70
4½	....	....	....	...	....	....	63.30	98.80	144.00
4¾	....	....	....	...	....	...	....	105.90	153.20
Thds. to inch	20	18	16	14	12&13	12	11	10	9

Length is from under head to extreme point.

All Cap Screws 1-inch diam. and less 4 inches long and under are threaded three-quarters of the length.

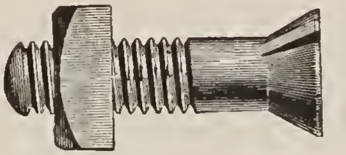
Larger sizes threaded one-half of the length.

On orders for ½-inch size we send 13 threads to the inch unless otherwise specified.

Packed as follows:

¼-inch, all lengths..........100
5/16-inch lengths up to 2½-inch 100
5/16x2¾-inch, and longer..... 50
⅜x¾ to 2½-inch............100
⅜x2¾-inch and longer...... 50
7/16x¾ to 2-inch.............100
7/16x2¼-inch and longer...... 50
½x¾ to 1¼-inch...........100
½x1½ to 4-inch......... ... 50
½x4-inch and longer.. 25
9/16x1 to 1½-inch............ 50
9/16x1¾-inch and longer...... 25
⅝x1 to 1¼-inch............ 50
⅝x1½-inch and longer...... 25
¾-inch, all lengths.......... 25
Larger sizes except following.25
⅞x4¾-inch and longer...... 20

KEY OR TIT.



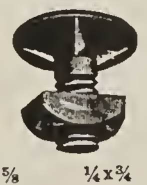
REGULAR HEAD.

No. *H1*—Round Neck, Round Countersunk Head.

FACTORY LIST PER HUNDRED.

Length, Inches.	Diameter, Inches. ⅜	7/16
1	$2 60	$3 55
1¼	2 75	3 75
1½	2 90	4 00
1¾	3 05	...
2	3 20	4 50
2¼	....	4 75
2½	....	5 00

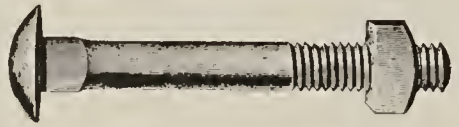
Slotted Head Elevator Bolts**



Size, ins.	¼x½	¼x⅝	¼x¾	¼x⅞
Per 100	6.60	6.60	6.60	6.90

100 in a package, no packages broken.

Cut Thread Carriage Bolts



With Manufacturers' Standard Square Nuts

List Per Hundred

	Diameter, Inches 3/16 and ¼			Diameter, Inches 5/16			Diameter, Inches 3/8			Diameter, Inches 7/16			Diameter, Inches ½			Diameter, Inches 9/16 and ⅝			Diameter, Inches ¾		
Length, Inches	Less than Full Container List	Container Quantity	Full Container List	Less than Full Container List	Container Quantity	Full Container List	Less than Full Container List	Container Quantity	Full Container List	Less than Full Container List	Container Quantity	Full Container List	Less than Full Container List	Container Quantity	Full Container List	Less than Full Container List	Container Quantity	Full Container List	Less than Full Container List	Container Quantity	Full Container List
¾	......	......	$ 2.70	......	......	$ 3.80	......	......	$ 4.60	......	......	......	......	......	......	......	......	......	......	......	......
1	$ 3 08	3000	2.80	$ 4.40	2300	4.00	$ 5 40	1700	4.90	$7.48	900	$ 6.80	$10.56	800	$ 9.60	$18.38	850	$16.70	$27.40	600	$24.90
1¼	3 20	3400	2.90	4 62	2100	4.20	5.72	1500	5 20	7 92	700	7.20	11.00	600	10.00	18.38	800	16.70	27.40	500	24.90
1½	3.30	4200	3 00	4.84	3000	4.40	6 16	2400	5.60	8.36	900	7.60	11.56	1000	10.50	18.92	800	17.20	27.40	450	24.90
1¾	3.64	2800	3.30	5.28	2000	4.80	6.82	1500	6.20	9.36	600	8.50	12.54	600	11.40	20.02	700	18.20	28.82	425	26.20
2	3.64	4500	3.30	5.28	2700	4.80	6.82	2000	6.20	9.36	1000	8 50	12.54	1000	11.40	20.02	600	18.20	28.82	400	26.20
2½	4.08	5000	3 70	5.84	2800	5.30	7.60	2100	6.90	10.46	1000	9 50	13 54	1000	12.30	21.12	550	19.20	30.26	350	27.50
3	4.40	3600	4 00	6.28	2400	5.70	8 26	2000	7.50	11.34	900	10.30	14.52	1000	13.20	22.22	450	20.20	31.68	300	28.80
3½	4.84	2400	4.40	6.82	2000	6.20	9.02	1800	8.20	12.32	800	11.20	15.52	900	14.10	23.32	400	21.20	33.12	275	30.10
4	6 38	2200	5.80	7.38	1800	6.70	9.80	1600	8.90	13.32	800	12.10	16.50	800	15.00	24.42	400	22.20	34.54	250	31.40
4½	6.72	2000	6.10	8.92	1600	8.10	10.46	1200	9.50	14.20	600	12 90	17.50	600	15.90	25.52	300	23.20	35.98	225	32.70
5	7.04	1600	6 40	9.46	1200	8.60	11.78	1200	10.70	15.18	600	13.80	18.48	600	16.80	26 62	300	24.20	37.40	200	34.00
5½	7.38	1200	6.70	9.90	900	9 00	12 44	900	11.30	16.18	450	14.70	19.48	500	17.70	27.72	300	25.20	38.84	200	35.30
6	7.70	1100	7.00	10.34	900	9.40	13.20	1000	12.00	17.16	500	15.60	20.46	600	18.60	28.82	250	26.20	40.26	175	36.60
6½	8.04	1000	7.30	10.78	600	9.80	13.86	700	12.60	18.16	400	16.50	21.46	400	19.50	29.92	250	27.20	41.70	150	37.90
7	8.48	1000	7.70	11.34	800	10.30	14.64	800	13.30	19.14	400	17.40	22.44	500	20.40	31.02	225	28.20	43.12	150	39.20
7½	8.80	800	8.00	11.78	500	10.70	15.30	500	13.90	20.14	300	18.30	23.44	400	21.30	32.12	200	29.20	44.56	150	40.50
8	9.24	1000	8.40	12.32	700	11.20	16.06	700	14.60	21.12	300	19.20	24.42	400	22.20	32.22	200	30.20	45.98	125	41.80
8½	......	......	8.70	12.76	500	11.60	16.72	400	15.20	22.12	200	20.10	26.52	400	24.10	34.32	175	31.20	47.30	125	43.00
9	......	......	9.10	13.32	500	12.10	17.50	500	15.90	23.10	300	21.00	27.50	300	25.00	35.42	150	32.20	48.84	125	44.40
9½	......	......	9.40	13.76	400	12.50	18.16	300	16.50	24.10	200	21.90	28.50	250	25.90	36.52	150	33.20	50.28	100	45.70
10	......	......	9.80	14.30	500	13.00	18.92	600	17.20	25.08	200	22.80	29.48	350	26.80	37.62	150	34.20	51.70	100	47.00
10½	......	......	10.50	......	......	13.90	20.46	300	18.60	26.96	200	24.50	31.46	200	28.60	39.82	125	36.20	54.56	75	49.60
11	......	......	10.50	......	......	13.90	20.46	300	18.60	26.96	200	24.50	31.46	200	28.60	39.82	100	36.20	54.56	75	49.60
11½	......	......	11.20	......	......	14.80	22 00	250	20.00	28.82	200	26.20	33.44	200	30.40	42.02	100	38.20	57.42	75	52.20
12	......	......	11.20	......	......	14.80	22.00	250	20.00	28.82	200	26 20	33.44	200	30.40	42.02	100	38.20	57.42	75	52.20
13	......	......	12.30	......	......	16.10	......	......	22.20	......	......	28.80	35.42	200	32.20	44.22	100	40.20	60.28	75	54.80
14	......	......	12 90	......	......	17.00	......	......	23.50	......	......	30.50	37.40	200	34.00	46.42	100	42.20	63.14	75	57.40
15	......	......	13.60	......	......	17.90	......	......	24.80	......	......	32.40	39.38	200	35.80	48.62	100	44.20	66.00	75	60.00
16	......	......	14.20	......	......	18.80	......	......	26.10	......	......	34.20	41.36	200	37.60	50.82	100	46.20	68.86	75	62.60
17	......	......	14.90	......	......	19.70	......	......	27.40	......	......	36 00	43.34	200	39.40	53.02	100	48.20	71.72	75	65.20
18	......	......	15.50	......	......	20.60	......	......	28.70	......	......	37.80	45.32	200	41.20	55.22	100	50.20	74.58	75	67.80
19	......	......	16.20	......	......	21.50	......	......	30 00	......	......	39.60	47.30	200	43 00	57.42	100	52.20	77.44	75	70.40
20	......	......	16 90	......	......	22.40	......	......	31.30	......	......	41.40	49.28	200	44.80	59.62	100	54.20	80.30	75	73.00

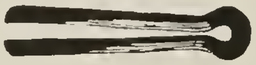
Intermediate lengths take next higher list.

We carry in stock and regularly furnish cut thread on all sizes. We do not stock rolled thread; however, sizes ⅜x6 and smaller are sold at 10% lower list. Larger than ⅜x6 take Machine Bolt list.

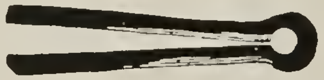
Approximately packed 3/16 and ¼-inch, 100; 5/16, ⅜, 7/16 and ½-inch up to 10 inches long, 50; larger and longer, 25 in a package. We will not break packages on ½-inch and smaller.

SPRING COTTERS

STRAIGHT SIZES

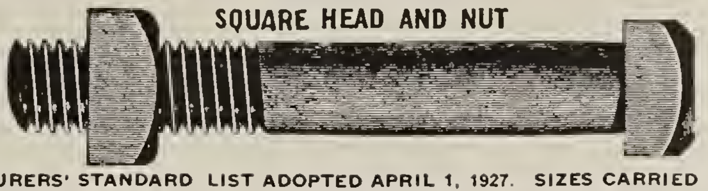


Factory list per thousand.



Wire gauge	No. 16.	No. 13	No. 11	No. 7	No. 4	No. 1	
Diameter, inch	1/16	3/32	⅛	3/16	¼	5/16	⅜
Length, inch ½	$0 35	......	......	......	......	......	......
Length, inch ¾	45	$0 53	$0 75	$1 70	......	......	......
Length, inch 1	55	65	90	2 05	$3 40	......	......
Length, inches 1¼	....	....	1 10	2 40	4 00	$6 20	......
Length, inches 1½	....	....	1 25	2 75	4 60	7 10	......
Length, inches 1¾	....	....	1 45	3 10	5 20	8 05	$13 00
Length, inches 2	....	....	1 60	3 45	5 80	9 00	13 00
Length, inches 2¼	....	....	....	3 80	6 40	9 90	15 50
Length, inches 2½	....	....	....	4 15	7 00	10 80	15 50
Length, inches 3	....	....	....	......	7 80	11 70	18 00
Length, inches 3½	....	....	....	......	......	......	20 50
Length, inches 4	....	....	....	......	......	......	23 00

MACHINE BOLTS
SQUARE HEAD AND NUT



MANUFACTURERS' STANDARD LIST ADOPTED APRIL 1, 1927. SIZES CARRIED IN STOCK.

Length, Inches.	Diameter Inches.																	
	¼		5/16		⅜		7/16		½		⅝		¾		⅞		†1	
	Per 100	No. in Case.	Per 100.	No. in Case.	Per 100.	No. in Case.	Per 100.	No. in Case.	Per 100.	No. in Case.	Per 100.	No. in Case.	Per 100.	No. in Case.	Per 100.	No. in Case.	Per 100.	No. in Case.
¾	$1 40	4000	$2 00	2500	$2 45	2000	$4 15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1	1 45	3200	2 10	3000	2 60	2800	4 35	1000	$ 5 20	1200	$ 8 10	850	.....	.....	.....	.....	.....	.....
1¼	1 55	3200	.....	.....	2 75	2000	.....	.....	5 40	1200	.....	.....	.....	.....	.....	.....	.....	.....
1½	1 60	3400	2 30	2100	2 95	2400	4 75	1000	5 65	1200	8 60	800	$10 95	475	$16 70	300	$23 25	.....
1¾	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11 60	450	.....	.....	.....	.....
2	1 80	3000	2 60	2000	3 25	2000	5 20	1000	6 10	1000	9 10	600	11 60	425	17 60	275	.....	.....
2½	2 00	2700	2 85	2400	3 60	1800	5 70	900	6 55	1000	9 60	600	12 25	375	18 50	225	25 55	180
3	2 15	2400	3 05	2400	3 90	1500	6 10	900	7 00	800	10 10	500	12 90	325	19 40	200	26 70	150
3½	2 35	2000	3 30	1800	4 25	1200	6 55	800	7 45	800	10 60	400	13 55	275	20 30	190	27 85	135
4	3 05	2000	3 55	1400	4 60	1200	7 00	800	7 90	600	11 10	400	14 20	275	21 20	150	29 00	125
4½	3 20	1600	4 25	1300	4 90	1000	7 40	600	8 35	600	11 60	300	14 85	225	22 10	150	30 15	110
5	3 35	1300	4 50	1000	5 55	900	7 85	600	8 80	600	12 10	300	15 50	200	23 00	150	31 30	110
5½	.....	.....	4 70	800	5 85	600	8 30	400	9 25	500	12 60	275	16 15	200	23 90	130	.....	.....
6	3 65	1100	4 90	900	6 20	800	8 75	500	9 70	600	13 10	250	16 80	175	24 80	130	33 60	100
6½	3 80	1000	5 10	600	6 50	500	9 20	400	10 15	400	13 60	250	17 45	175	.....	.....	.....	.....
7	4 00	1000	5 35	800	6 85	600	9 65	400	10 60	400	14 10	225	18 10	150	26 60	110	35 90	80
7½	.....	.....	5 55	500	7 15	400	10 10	300	11 05	250	14 16	225	.....	.....	.....	.....	.....	.....
8	.....	.....	5 80	600	7 50	600	10 55	300	11 50	350	15 10	200	19 40	125	28 40	100	38 20	80
8½	.....	.....	.....	.....	7 80	400	.....	.....	11 95	200	15 60	200	20 05	125	.....	.....	.....	.....
9	.....	.....	.....	.....	8 15	500	11 45	300	12 40	300	16 10	175	20 70	125	30 20	100	40 50	75
9½	.....	.....	.....	.....	8 45	300	.....	.....	12 85	200	16 60	175	.....	.....	.....	.....	.....	.....
10	.....	.....	.....	.....	8 80	500	.....	.....	13 30	300	17 10	150	22 00	125	32 00	90	42 80	60
10½	.....	.....	.....	.....	.....	.....	.....	.....	14 70	200	.....	.....	.....	.....	.....	.....	.....	.....
11	.....	.....	.....	.....	.....	.....	.....	.....	14 70	200	18 10	150	23 30	100	33 80	75	.....	.....
12	.....	.....	.....	.....	10 20	300	.....	.....	15 60	200	19 10	125	24 60	100	35 60	75	47 40	50
13	.....	.....	.....	.....	.....	.....	.....	.....	16 50	.....	20 10	125	25 90	100	37 40	75	.....	.....
14	.....	.....	.....	.....	.....	.....	.....	.....	17 40	.....	21 10	100	27 20	100	39 20	50	52 00	50
15	.....	.....	.....	.....	.....	.....	.....	.....	18 30	.....	22 10	100	28 50	100	41 00	50	.....	.....
16	.....	.....	.....	.....	.....	.....	.....	.....	19 20	.....	23 10	100	29 80	100	42 80	50	56 60	50
17	.....	.....	.....	.....	.....	.....	.....	.....	20 10	.....	24 10	100	31 10	100	.....	.....	.....	.....
18	.....	.....	.....	.....	.....	.....	.....	.....	21 00	.....	25 10	100	32 40	100	46 40	50	61 20	50
20	.....	.....	.....	.....	.....	.....	.....	.....	22 80	.....	27 10	.....	35 00	100	50 00	50	65 80	50
22	.....	.....	.....	.....	.....	.....	.....	.....	24 60	.....	29 10	.....	37 60	.....	.....	.....	70 40	.....
24	.....	.....	.....	.....	.....	.....	.....	.....	26 40	.....	31 10	.....	40 20	.....	.....	.....	75 00	.....
26	.....	.....	.....	.....	.....	.....	.....	.....	27 00	.....	33 10	.....	42 80	.....	.....	.....	.....	.....
28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45 40	.....	.....	.....	.....	.....

Intermediate lengths take next higher list.

† Our regular stock 1 inch machine bolts are with hexagon nuts to which we charge $1.50 per 100 net extra.

EXTRAS.

FOR MANUFACTURERS' STANDARD HEXAGON HEAD—ADD TO LIST.

Diameter, inches	3/16	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
Per hundred	$0 15	15	20	30	45	65	1 00	1 00	1 40	2 20	3 00

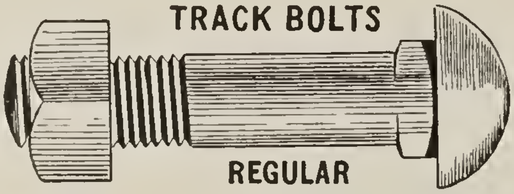
¼ inch diameter, 100 in a box; 5/16, ⅜, 7/16 and ½ inch diameter, 50 in a box; ⅝ and ¾ inch diameter, 25 in a box; ⅞ and 1 inch diameter, packed loose.

WEIGHTS.

Average Weight of One Hundred Machine Bolts, Pounds.

L'gth, Ins.	Diameter, Inches.								
	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
1	3	4	8	11	17	34	50	..	...
1½	3½	6	9	15	19	35½	54	..	...
2	4	7	10	17	22	38	60	90	...
2½	4¾	8	12	19	24	42	65	99	148
3	5½	9	13	21	27	46	71	107	159
3½	6	10	15	23	30	50	77	115	169
4	6¾	11	16	25	32	55	82	124	180
4½	7	12	18	27	35	59	88	132	191
5	8	13	19	29	38	63	95	140	202
5½	8½	14	21	31	40	67	101	148	213
6	9	15	22	33	43	71	107	157	223
6½	10	16	24	35	46	75	113	165	234
7	10½	17	25	37	48	79	119	173	245
7½	......	18	27	39	51	84	125	182	256
8	......	19	28	41	54	88	131	190	267
9	......	......	32	45	59	90	143	207	288
9½			33½	47	62	97	149	215	299
10			35	49	65	104	156	223	310
10½			36	51	67½	108	161	231	320
11			38	..	70	113	168	240	331
12			41	..	76	121	180	256	353
13			..	..	81	129	192	273	375
14			..	..	87	138	204	290	396
15			..	..	92	146	217	306	418
16			..	..	98	154	229	323	439
17			..	..	103	162	241	339	461
18			..	..	109	171	253	356	483
20			..	..	120	187	278	389	526
22			..	..	132	198	302	423	570
24			..	..	144	210	327	457	614
26			..	..	156	226	352	491	658
28			..	..	...	...	377	524	702

TRACK BOLTS

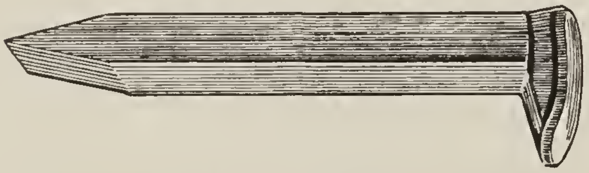


Steel bolts with cold-rolled thread.

Size, ins.	½x1¾	½x2
For Rails, yard, lbs.	12-16	12-16
Approximate number in keg	890	793
Advance over base price, per 100 lbs.	$ 1.55	1.35
Net per 100 lbs.	13.90	13.50
Size, ins.	¾x3½	¾x3¾
For Rails, yard, lbs.	55-60	70-75
Approximate number in keg	258	249
Advance over base price	Base	Base
Net per 100 lbs.	10.30	10.30
Size, ins.	¾x4	⅞x4
For Rails, yard, lbs.	70-75	. . .
Approximate number in keg	241	161
Advance over base price	Base	Base
Net per 100 lbs.	10.30	10.30
Size, ins.	⅞x4¼	⅞x4½
For Rails, yard, lbs.	. . .	. . .
Approximate number in keg	158	155
Advance over base price	Base	Base
Net per 100 lbs.	10.30	10.30

With United States standard square or hexagon nuts. Prices quoted on application. Two hundred pounds in a keg.

TRACK SPIKES



Wrought Iron

Thickness, inch	5/16	⅜	⅜	⅜
Length, ins.	2½	2½	3	3½
Number spikes in a keg	2160	1600	1370	1180
Advance over base price, per 100 lbs.	0.95	.65	40	40
Net per 100 lbs.	12.20	11.10	10.60	10.60
Thickness, in.	½	½	½	9/16
Length, ins.	3½	4	4½	5½
Number spikes in a keg	620	600	530	360
Advance over base price, per 100 lbs.	0.15	.15	15	Base
Net per 100 lbs.	9.80	9.30	9.30	8.30

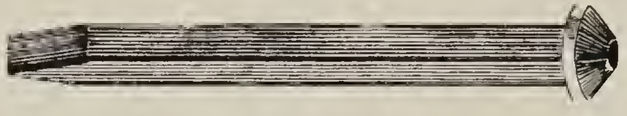
Two hundred pounds in a keg. Less than keg lots add $1.00 per 100 pounds.

TRACK SPIKE SPECIFICATIONS

Size, Measured Under Heads, Ins.	Average Number per Keg	Number to Lay 1 Mile Track, 4 to Tie, Ties 2 Feet from Center to Center	Rail Used Weight per Yard Pounds
5/16x2½	2160	1000 Lbs., 5 Kegs	8 to 10
⅜x2½	1600	1320 " 6⅜ "	12 to 16
⅜x3	1370	1540 " 7¾ "	16 to 20
⅜x3½	1180	1780 " 9⅞ "	16 to 20
½x4	600	3520 " 17⅜ "	25 to 35
½x4½	530	3900 " 19½ "	28 to 35
9/16x5½	360	5800 " 29 "	45 to 70

Note—other sizes of railroad spikes furnished upon application.

BOAT SPIKES

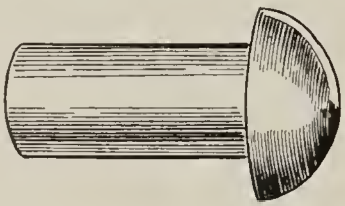


Wrought Iron

Thickness, in.	5/16	5/16	⅜	½
Length, ins.	6	7	8	10
Number spikes in a keg	1175	974	600	275
Advance over base price, per 100 lbs.	0.70	.70	.55	.40
Net per 100 lbs.	$11.70	11.70	11.40	11.40

STRUCTURAL RIVETS

Round Head, Open Hearth Steel



Diameter ½ Inch

Length, ins.	¾	1	1¼
Advance over base, per 100 lbs.	$ .60	.60	.50
Length, ins.	1½	1¾	2
Advance over base, per 100 lbs.	.50	.50	.35
Length, ins.	2¼	2½	3
Advance over base, per 100 lbs.	.35	.35	.35

Diameter ⅝ Inch

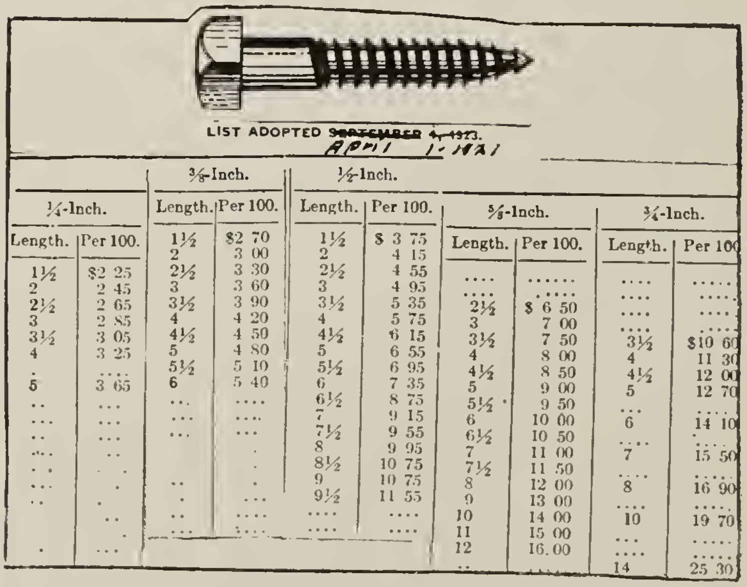
Length, ins.	1	1¼	1½
Advance over base, per 100 lbs.	$ .40	.30	.30
Length, ins.	1¾	2	2¼
Advance over base, per 100 lbs.	.30	.15	.15
Length, ins.	2½	2¾	3
Advance over base, per 100 lbs.	.15	.15	.15

Diameter ¾ Inch

Length, ins.	1½	1¾	2–2¼
Advance over base, per 100 lbs.	$ .15	.15	Base
Length, Ins.	2¼-2½-2¾-3-3¼-3½-4-4½		
Advance over base, per 100 lbs.	Base		
Base price per 100 lbs.	$10.00		

COACH OR LAG SCREWS

Gimlet Point——Square Head

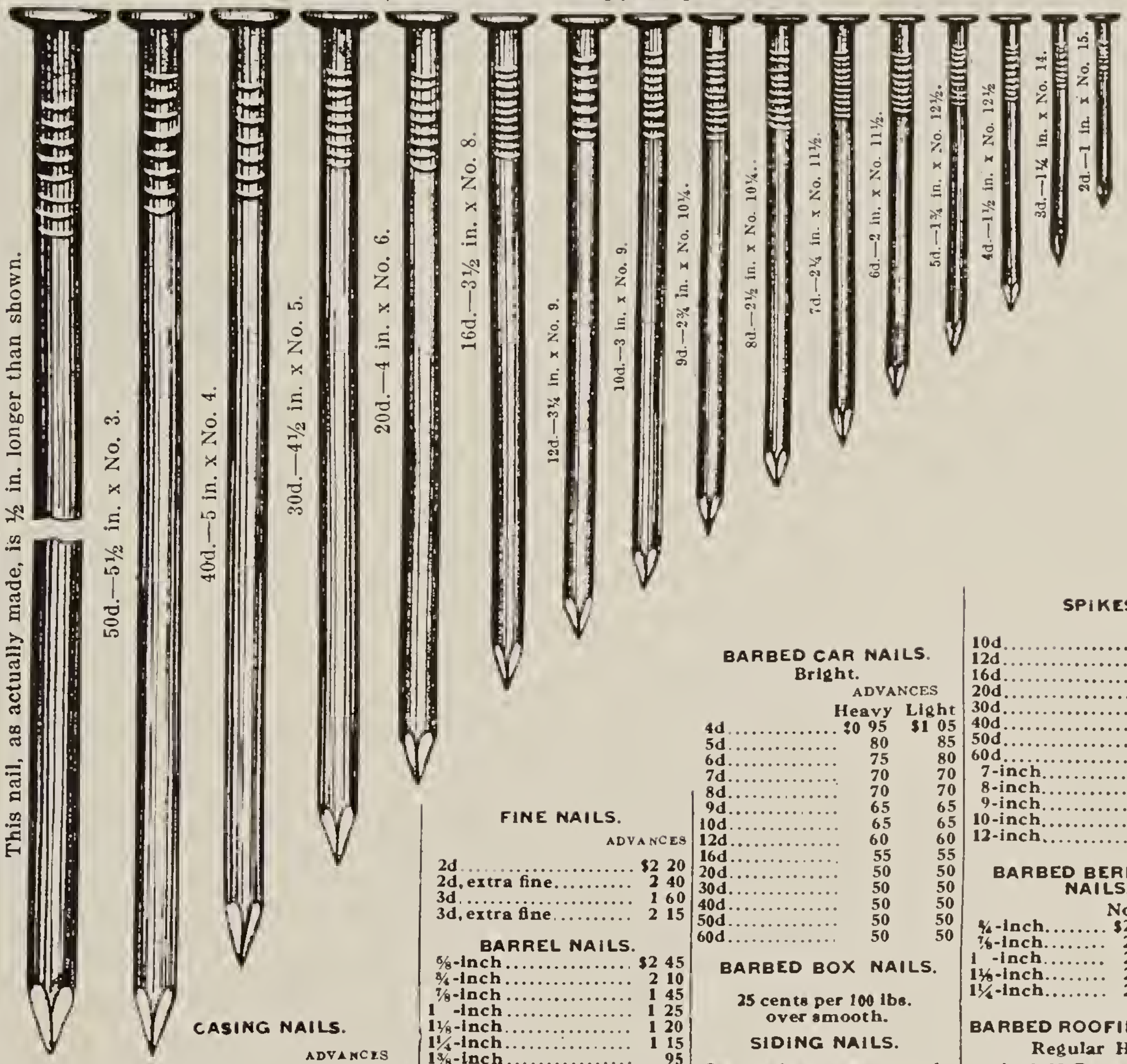


LIST ADOPTED ~~SEPTEMBER 4, 1923.~~
April 1-1921

¼-Inch. Length.	¼-Inch. Per 100.	⅜-Inch. Length.	⅜-Inch. Per 100.	½-Inch. Length.	½-Inch. Per 100.	⅝-Inch. Length.	⅝-Inch. Per 100.	¾-Inch. Length.	¾-Inch. Per 100.
1½	$2 25	1½	$2 70	1½	$ 3 75	....	......	....	.....
2	2 45	2	3 00	2	4 15	....	.....	....	.....
2½	2 65	2½	3 30	2½	4 55	2½	$ 6 50	....	.....
3	2 85	3	3 60	3	4 95	3	7 00	....	.....
3½	3 05	3½	3 90	3½	5 35	3½	7 50	3½	$10 60
4	3 25	4	4 20	4	5 75	4	8 00	4	11 30
.	....	4½	4 50	4½	6 15	4½	8 50	4½	12 00
5	3 65	5	4 80	5	6 55	5	9 00	5	12 70
..	...	5½	5 10	5½	6 95	5½	9 50	...	.....
....	...	6	5 40	6	7 35	6	10 00	6	14 10
..	...	...	....	6½	8 75	6½	10 50	....	.....
....	..	...	....	7	9 15	7	11 00	7	15 50
. .	. .	...	...	7½	9 55	7½	11 50	....	.....
...	.		.	8	9 95	8	12 00	8	16 90
..	.		.	8½	10 75	9	13 00	....	.....
	..	..	.	9	10 75	10	14 00	10	19 70
	.	.	...	9½	11 55	11	15 00	...	.....
.	...	..	....	....	....	12	16.00	....	.....
		...	....	....	....	..	......	14	25 30

STEEL WIRE NAILS.
STANDARD NAIL CARD.
Adopted and Effective December 1, 1927.

ADVANCES ON STANDARD WIRE NAILS, IN KEGS.
PRICES, ADVANCE PER 100 POUNDS OVER BASE.


This nail, as actually made, is ½ in. longer than shown.
60d.—6 in. x No. 2.
50d.—5½ in. x No. 3.
40d.—5 in. x No. 4.
30d.—4½ in. x No. 5.
20d.—4 in. x No. 6.
16d.—3½ in. x No. 8.
12d.—3¼ in. x No. 9.
10d.—3 in. x No. 9.
9d.—2¾ in. x No. 10¼.
8d.—2½ in. x No. 10¼.
7d.—2¼ in. x No. 11½.
6d.—2 in. x No. 11½.
5d.—1¾ in. x No. 12½.
4d.—1½ in. x No. 12½
3d.—1¼ in. x No. 14.
2d.—1 in. x No. 15.

COMMON WIRE NAILS.

	ADVANCES
2d	$1 65
3d	1 15
4d	80
5d	70
6d	60
7d	55
8d	50
9d	45
10d	40
12d	35
16d	30
20d	25
30d	25
40d	25
50d	25
60d	25

BARBED COMMON NAILS.
25 cents per 100 lbs. over smooth.

CASING NAILS.

	ADVANCES
2d	$1 70
3d	1 20
4d	1 05
5d	95
6d	70
7d	65
8d	60
9d	55
10d	50
12d	45
16d	40
20d	30
30d	30
40d	30

FINISHING NAILS.

2d	$2 25
3d	1 60
4d	1 45
5d	1 35
6d	80
7d	75
8d	65
9d	60
10d	55
12d	50
16d	45
20d	35

FINE NAILS.

	ADVANCES
2d	$2 20
2d, extra fine	2 40
3d	1 60
3d, extra fine	2 15

BARREL NAILS.

⅝-inch	$2 45
¾-inch	2 10
⅞-inch	1 45
1 -inch	1 25
1⅛-inch	1 20
1¼-inch	1 15
1⅜-inch	95
1½-inch	90

FLOORING BRADS.

6d	$0 65
7d	60
8d	55
9d	50
10d	45
12d	40
16d	35
20d	30

SMOOTH BOX NAILS.

2d	$1 65
3d	1.15
4d	1 00
5d	90
6d	65
7d	60
8d	55
9d	50
10d	45
12d	40
16d	35
20d	25
30d	25
40d	25

BARBED CAR NAILS.
Bright.

	ADVANCES Heavy	 Light
4d	$0 95	$1 05
5d	80	85
6d	75	80
7d	70	70
8d	70	70
9d	65	65
10d	65	65
12d	60	60
16d	55	55
20d	50	50
30d	50	50
40d	50	50
50d	50	50
60d	50	50

BARBED BOX NAILS.
25 cents per 100 lbs. over smooth.

SIDING NAILS.
Same advance as smooth box nails.

SHINGLE NAILS.

	ADVANCES
3d	$1 05
3½d	85
4d	80

SLATING NAILS.

2d	$1 20
3d	1 00
4d	85
5d	75
6d	65

FENCE NAILS.

5d	$0 60
6d	55
7d	45
8d	45
9d	40
10d	40
12d	35
16d	30
20d	25

SPIKES.

	ADVANCES
10d	$0 40
12d	35
16d	30
20d	25
30d	25
40d	25
50d	25
60d	25
7-inch	25
8-inch	35
9-inch	35
10-inch	45
12-inch	45

BARBED BERRY BOX. NAILS.

	No. 16	No. 17
¾-inch	$2 80	$3 00
⅞-inch	2 55	2 75
1 -inch	2 35	2 55
1⅛-inch	2 30	2 50
1¼-inch	2 25	2 45

BARBED ROOFING NAILS.
Regular Head.

¾-Inch 13 Gauge		$1 55
⅞-inch, 12	"	1 30
1 -inch, 12	"	1 20
1⅛-inch, 12	"	1 10
1¼-inch, 11	"	95
1⅜-inch, 11	"	90
1½-inch, 10	"	80
1¾-inch, 10	"	75
2 -inch, 9	"	65

⅞ INCH HEAD.

¾-inch, 10	Gauge		$1 85
⅞-inch, "	"		1 75
1 -inch, "	"		1 65
1⅛-inch, "	"		1 60
1¼-inch, "	"		1 55
1½-inch, "	"		1 50
1¾-inch, "	"		1 45
2 -inch, "	"		1 40

STERILIZED BLUED LATH NAILS.

2d	$2 55
2d Light	2 75
3d	1 95
3d Light	2 50

EXTRAS

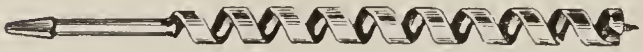
Annealed Nails (Except Clinch and Hinge), Extra	Per 100 Pounds,	$0 25
Blued Nails, Extra	Per 100 Pounds,	35
Special Heads or Points, Extra	Per 100 Pounds,	15

FOR GALVANIZING AND TINNING.

Standard and Miscellaneous—		Galvanizing.	Tinning
2d and Larger	Per 100 Lbs.,	$....	......
Smaller than 2d	Per 100 Lbs.,	....	......
Shingling—3d and 4d	Per 100 Lbs.,	....	......
Large Head Roofing, All Sizes,	Per 100 Lbs.,	....	......

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

SHIP AUGERS



Snell's No. 541; Forged crucible steel, with screw; japanned twist, polished edge.

Size, Inch	5-16	6-16	7-16	8-16	9-16	10-16
Twist Inches	10	10	10	10	10	10
Length, Inches	14	14	14	14	14	14
Weight, Lbs.	6	8½	12	14½	21	25
Factory List	$1.60	$1.60	$1.60	1.60	$1.60	$1.60

Size, Ins.	11-16	12-16	13-16	14-16	15-16	16-16
Twist, Ins.	12	12	12	12	12	12
Length, Ins.	16	16	16	16	16	16
Weight, Lbs.	30	34	39	44	48	54
Factory List	$1.75	$1.75	$1.85	$1.85	$2.00	$2.00

Size, Inch	17-16	18-16	19-16	20-16
Twist, Inches	14	14	14	14
Length, Inches	18	18	18	18
Weight, Pounds	59	66	69	80
Factory List	$2.15	$2.15	$2.55	$2.55

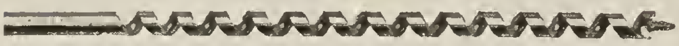
Snell's No. 552 Ship Augers, With Screw; 18-inch Twist.

Size, Ins.	7-16	9-16	11-16
Length, Ins.	23½	24¼	24¼
Weight, Lbs.	5	9	12
Factory List	$2.10	$2.30	$2.80

Snell's No. 552 Ship Augers, with Screw; 24-inch Twist. —

Size, Inch	7-16	9-16	11-16
Length, inches	30¼	30¼	29¾
Weight, Pounds	6	10	14
Factory List	$3.90	$3.90	$4.25

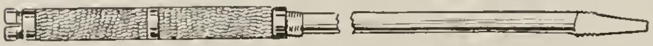
SHIP AUGERS FOR DRILLING HOLES IN TIMBERS



Can furnish length of twist either 12", 18" or 24". Ship Augers any size diameter from ⅜" to 1½" for use with air drill wood borer. Immediate shipment. Prices on request.

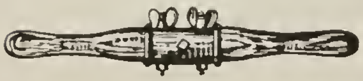
Ship Auger or Derrick Auger either 18" twist or 24" twist, length over all 36", complete with handle for hand work, any diameter from ½" to 2". $3.00 to $10.00.

EXTENSION BIT HOLDER



Miller Falls; Chuck shell of heavy extra steel tubing; jaws drop forged, knurled adjusting rod; one-piece socket and shank; polished over all; follows 11-16 bit.

Nos.	12	15	18	24
Length, Inches	12	15	18	24
Weight, Lbs.	7½	8½	10	12
Each	2.80	$3.00	$3.50	$3.75

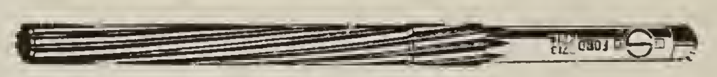


AUGER HANDLE

Polished Maple Handle, No. 60, adjustable for any size auger. Length 18 inches.

L.st Price Each $1.00

STRAIGHT SHANK TAPER REAMERS

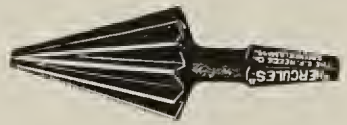


Little giant; spiral flute; straight shank; for adjustable tap wrenches.

Diameter, inch	¼	5/16	⅜	7/16	½	9/16	⅝
Fac'y list, ea.	$0.80	$0.80	$1.00	$1.10	$1.15	$1.20	$1.40

Diameter, ins.	11/16	¾	⅞	1	1⅛
Factory list, each	1.70	$2.00	$2.60	$3.40	$4.30

PIPE BURRING REAMERS

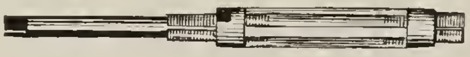


Drill Tool Steel; Square Shank; for Bit Brace

Large end, size, inches	1½	2 3/16
Point, size, inch	7/32	5/16
Factory l.st, each	$2.40	$4.80

The No. 1 will ream seven sizes of pipe, viz.: ⅛, ¼, ⅜, ½, ¾, 1 and 1¼ inches; No. 2, eight sizes: ¼, ⅜, ½, ¾, 1, 1¼, 1½ and 2 inches.

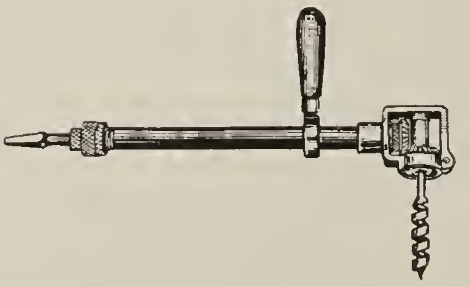
ADJUSTABLE REAMER



Finest quality tool steel; blades of special tempered steel extra fine threads.

No.	Range of expansion	Length blade, inches.	Length over all, inches.	Net wt. each, pound	F'c'y list Each
A	15/32 to 17/32	2	5¾	3/16	$ 6.10
B	17/32 to 19/32	2	6	¼	6.10
C	19/32 to 21/32	2½	6½	5/16	6.40
D	21/32 to 23/32	2½	7	⅜	6.40
E	23/32 to 25/32	2¾	7½	7/16	6.80
F	25/32 to 27/32	2¾	8	½	6.80
G	27/32 to 15/16	3	8½	⅞	7.40
H	15/16 to 1 1/16	3¼	9	1⅛	7.80
I	1 1/16 to 1 3/16	3½	10	1½	9.00
J	1 3/16 to 1 11/32	3¾	11	2¼	10.80
K	1 11/32 to 1 17/32	4	12	3⅛	13.00

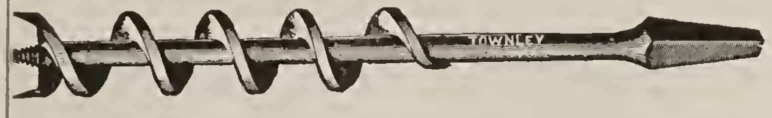
SILL BORER



Sill Borer; or Joist Tool; Malleable Iron Frame, Japanned; Adjustable Handle Ball Bearing; Hardened Steel Gear and Bushings; for Bit Stock Shanks only.

No. 51—Length 16½ inches; Depth of Head, 2⅜ Inches; Weight 3 lbs.
Each $7.00

AUGER BITS



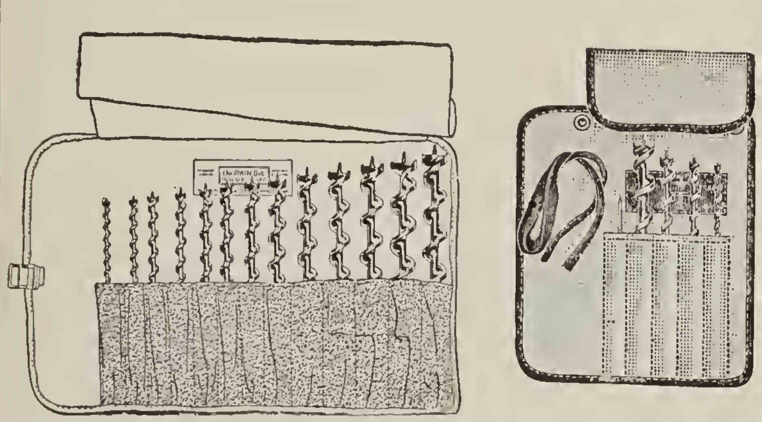
Extra Cast Steel; Full Polished; Extension Lips

Nos.	E3	E4	E5	E6	E7	E8	E9
Size, Inches	3–16	4–16	5–16	6–16	7–16	8–16	9–16
Factory List, doz.	6.00	5.00	5.00	5.00	5.00	5.00	6.00
Nos.	E10	E11	E12	E13	E14	E15	E16
Size, Inches	10-16	11-16	12-16	13-16	14-16	15-16	16-16
Factory list, doz	6.00	7.00	7.00	8.25	8.25	9.50	9.50

IN SETS

Set of 13 bits, one each 4-, 5-, 6-, 7-, 8-, 9-, 10-, 11-, 12-, 13-, 14-, 15- and 16-16 inches; 32½ quarters.
No. ES—Factory List, per set....................$7.50

AUGER BIT SETS
In Canvass Rolls



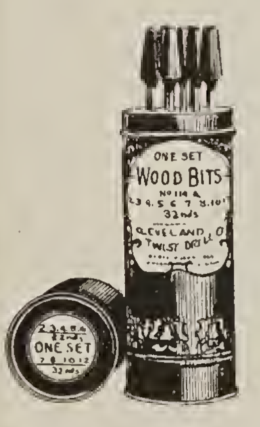
Open Closed

Rolls made of Heavy Brown Paraffine Canvas Duck, Leather-bound Edges, Leather Strap, Japanned Buckle, Thirteen Pockets, Sewed Separately, a Pocket for each Bit from 4-16ths to 1 inch. This Roll being made of Paraffine Duck keeps dampness from penetrating it, thus making it rust-proof.

No. 560R—Set of 32½ Quarters, consisting of 13 Bits, One Each 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16-16ths Inch; Net Weight per Set 3 Pounds ......Per Set, $10.60

One Set in a Roll

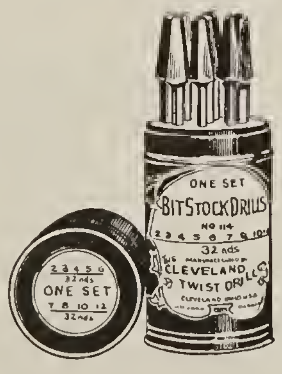
BIT SETS



Nine bits, one each 1/16, 3/32, ⅛, 5/32, 3/16, 7/32, ¼, ⅝ and ⅜-inch, in a round lithographed tin box, ½ inches in diameter, 8¾ inches high.

No. 13A—Net weight per set 1 pound .... Per set $4.60

One Set in a Package.



Nine bits, one each 1/16, 3/32, ⅛, 5/32, 3/16, 7/32, ¼, 5/16, and ⅜-inch, in a round lithographed tin box, 2½ ins. in diameter and 6½ ins. high.

No. 13—Net weight per set, 1 pound ....Per set $3.40

108—STRAIGHT SHANK DRILLS

Jobbers' and machinists', straight shank, forged crucible drill tool steel, short set; polished.

Diameter, inch	1/16	5/64	3/32	7/64	⅛	9/64	5/32
Length, inches..	2½	2⅝	2¾	2⅞	3	3⅛	3¼
Factory list, doz.	$1.60	$1.65	$1.70	$1.75	$1.80	$1.85	$1.90
Diameter, Inch..	11-64	3/16	13-64	7/32	15-64	¼	17-64
Length, inches..	3⅜	3½	3⅝	3¾	3⅞	4	4⅛
Factory list, doz.	$2.00	$2.25	$2.50	$2.75	$3.00	$3.25	$3.50
Diameter, inch..	9/32	19-64	5/16	21-64	11/32	23-64	⅜
Length, inches	4¼	4⅜	4½	4⅝	4¾	4⅞	5
Factory list, doz.	$3.80	$4.00	$4.35	$4.70	$5.05	$5.50	$6.00

Diameter, inch..	25-64	13/32	27-64	7/16	29-64	15/32	31-64	½
Length, ins.	5⅛	5¼	5⅜	5½	5⅝	5¾	5⅞	6
Factory list dz..	$6.50	7.00	7.75	8.50	9.25	10.00	11.00	12.00

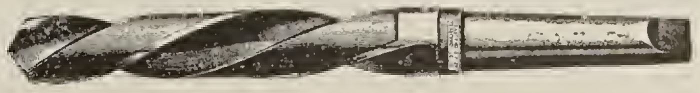
114—STOCK BIT DRILLS

Forged crucible drill tool steel; polished; bit stock for metal or wood.

Diameter, inch ..	1/16	3/32	⅛	5/32	3/16	7/32	¼
Length, inches ..	3 5/16	3 9/16	3 13/16	4 1/16	4 5/16	4¾	5
Factory list, doz.	$2.50	$2.70	$3.00	$3.50	$4.00	$4.50	$5.00
Diameter, inch..	9/32	5/16	11/32	⅜	13/32	7/16	15/32
Length, inches ..	5¼	5½	5¾	6	6¼	6½	6¾
Factory list, doz.	$6.00	$7.00	$8.00	$8.50	$9.25	10.50	11.75
Diameter, inch..	½	17/32	9/16	⅝	¾	⅞	1
Length, inches ..	7	7¼	7½	7½	7½	7½	7½
Factory list, dz	$13.00	14.25	15.50	18.00	24.00	30.00	36.00

Nos. 1/16 to 3/16, one dozen; balance, one-half dozen in a box.

TAPER SHANK DRILLS



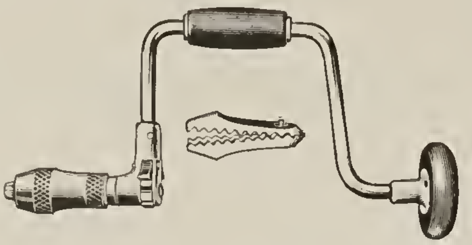
Taper shank; forged crucible drill tool steel; polished; with No. 1 taper shank; ½ inch in diameter at shoulder.

Diameter, in.	1/16	7-64	⅛	5/32	11-64	3/16	7/32	15-64	¼
Length, in...	5⅛	5½	5⅛	5⅜	5¾	5¾	5⅞	6	6⅛
Factory list, ea.	.45	.45	.45	.45	.50	.50	.55	.60	.60

Diamcter, Inch	17-64	9/32	5/16	11/32	⅜	13/32
Length, inches	6⅛	6¼	6⅜	6½	6¾	7
Factory list, each	$0.65	$0.65	$0.70	$0.75	$0.80	$0.90

Diameter, inch	7/16	15/32	½	17/32	9/16
Length, inches	7¼	7½	7¾	8	8¼
Factory list, each	$1.00	$1.10	$1.20	$1.30	$1.40

BIT BRACES



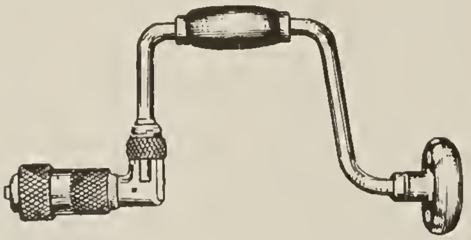
Miller falls; open ratchet; plain bearings; stained hardwood head and handle; barber chuck with cast alligator jaws-all metal parts polished.

No.	162
Sweep, Inches	10
List price, each	$3.10

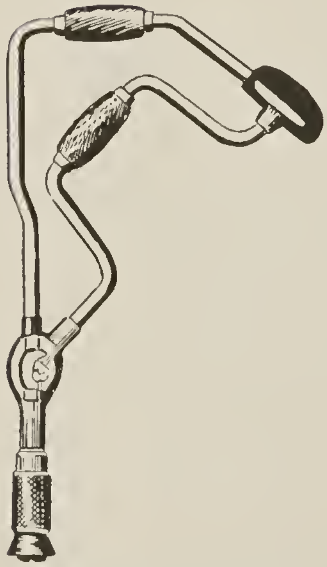
HOLDALL RATCHET BRACE

Miller's Falls boxed ratchet; nickel-plated steel rod $\frac{7}{16}$ inch diameter; Nickel-plated shell and ratchet ring; enclosed ratchet; ball-bearing metal-clad head; cocobolo head and handle; master "Hold-All" chuck for round shank bits ⅛ to ½ inch; No. 1 Morse tapered shanks; Forged steel jaws. 8 inch sweep.

List price, each $7.00



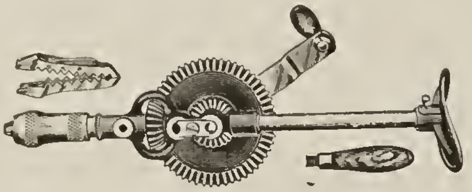
CORNER BIT BRACE



For corner work, when using a bit of ordinary size, these braces will work much faster than a regular ratchet brace. 8 inch sweep.

List price, each $10.00

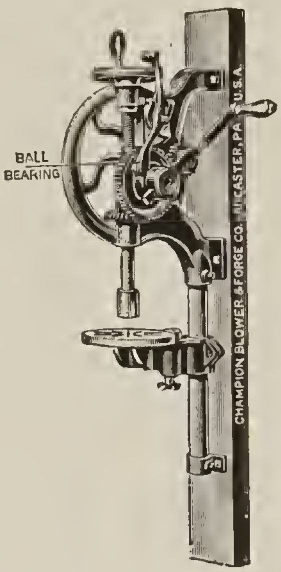
BREAST DRILL



Yankee; malleable iron frame; jet black finish;' steel spindle; ball bearings; cut gears; bright parts nickel-plated; polished hardwood handles.

Two speeds; three-jaw malleable iron chuck; polished and nickel-plated tool steel jaws; adjustable breastplate, with polished face; chuck for round shank drills up to ½-inch diameter; length 16½ inches.

No. 1455—List, each $10.70


BALL BEARING
CHAMPION BLOWER & FORGE CO. CASTER, PA U.S.A.

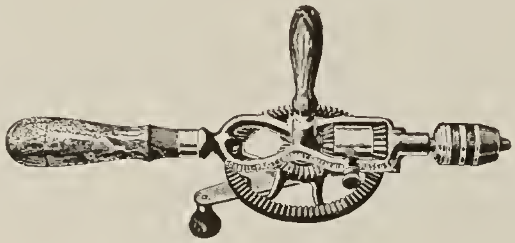
POST DRILLS

Buffalo; cast iron frame; steel shaft and spindle; hand and automatic feed; round, slotted cast iron table.

Drills up to ⅝-inch holes to center of 11½-inch circle; spindle diameter ⅞-inch; run of feed 3 inches; run of table 10½ inches; length 32 inches; takes ½-inch straight shank bit; weight 63 pounds.

No. 61—List price, each....$12.00

HAND DRILLS

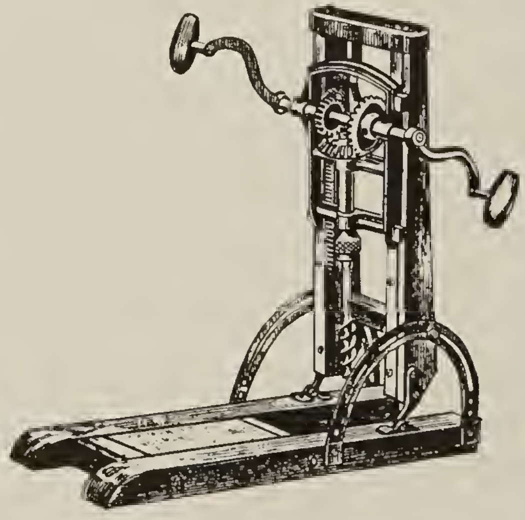


Miller falls; Japanned malleable iron frame; three jaw chuck; protected springs; single speed; ball thrust bearings; cut gears; side detachable handles; cocobola handle; steel pinion.

Handle holds eight wood boring bits; capacity of chuck, 0 to ⅜ inches; round shank drills; length, 14½ inches.

No. 2—List price, each $6.00

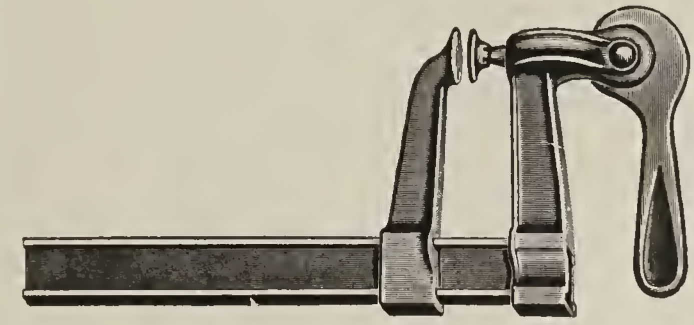
BORING MACHINE



This machine is carefully made and will render accurate service. The rack is strong and will not slip. Upright wood frame; adjustable depth gauge; self withdrawing auger. Weight about 35 lbs.

Price, without augers $15.00

CURB CLAMPS



The Long Reach clamp is made of 1⅞ in. I Steel bar and has 6 in. reach.

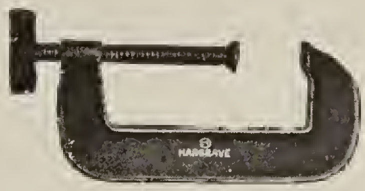
Eccentric or screw as specified, if not specified we send the eccentric.

Especially adapted to carpentering and building, concrete construction and in the trades generally where pressure is required 6 in. from the edge of the work.

Either Eccentric or Screw

Size	Reach	Per doz.	Approximate net wt. per doz
12 in.	6 in.	$ 90.00	104 lbs.
18 in.	6 in.	100.00	116 lbs.
24 in.	6 in.	110.00	128 lbs.
30 in.	6 in.	120.00	140 lbs.
36 in.	6 in.	140.00	152 lbs.
48 in.	6 in.	160.00	176 lbs.
60 in.	6 in.	200.00	200 lbs.
72 in.	6 in.	220.00	224 lbs.
84 in.	6 in.	240.00	248 lbs.
96 in.	6 in.	280.00	272 lbs.

CLAMPS

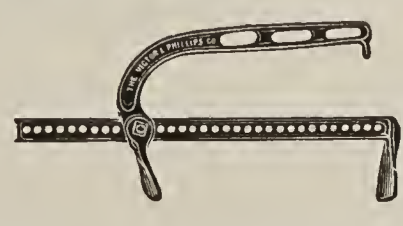


Malleable iron, natural finish; swivel head; solid steel screw; heavy ribbed frame.

Nos.	12	13	14	15	16
Opening Ins.	2½	3	4	5	6
Weight, Lbs.	⅝	⅞	1½	1⅞	2¼
Factory list, doz.	$7.00	8.00	11.00	14.00	18.00

No.	17	18	20	22
Opening In.	7	8	10	12
Weight Lbs.	3	3⅝	5⅜	7½
Factory list, doz.	$22.00	28.00	36.00	46.00

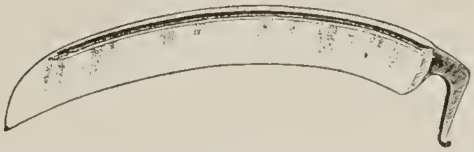
BRICK CLAMP OR CARRIERS


THE VICTOR L. PHILLIPS CO.

A most satisfactory tool for handling brick; adjustable to all sizes.

No. 2—List price, each $4.50

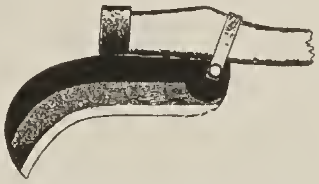
BUSH SCYTHES



Welded Cutlass steel cutting edge, tempered in oil; soft steel center; double bead; natural finish back and heel; highly polished face, web and cutting edge.

No. 50—Per doz. $36.00

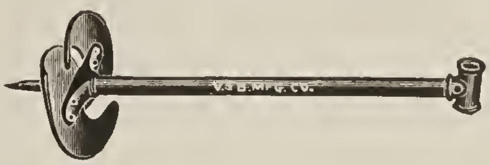
BUSH AXE OR HOOK



34-inch hickory handle; weight about 2½ pounds.

List price, each $3.00

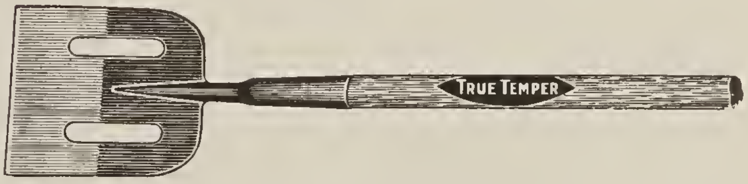
POST HOLE AUGERS



Forged steel blades, tubular steel upright with malleable iron T and wood cross handle, malleable iron point, black Japanned.

Nos.	16	18
Diameter, inches	6	8
Weight, dozen, lbs.	60	64
List price, each	$2.50	$2.50

CONCRETE TAMPERS



True Temper Quality

Slotted Blade Pattern; handles 4½ ft. long.

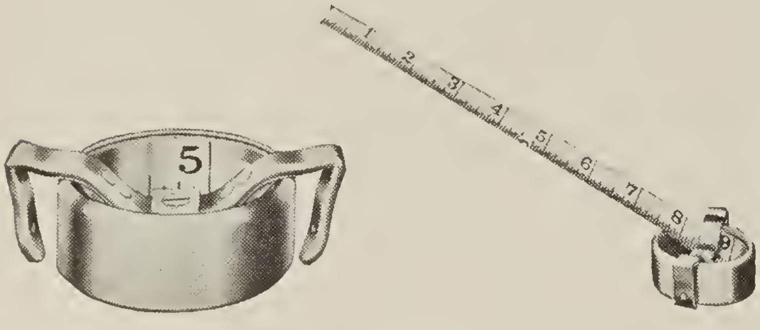
Our concrete tampers were designed especially for us by cement contractors and those engaged in the building of concrete walls, etc. The shank and handle are offset from the plane of the blade so that it can be pushed down flush with the side of the form. By doing this the very fine concrete is brought toward the form thereby insuring a smooth surface after hardening and removing the form. Made in both slotted socket heavy pattern and solid blade like shank pattern.

7 in. Heavy blade, socket pattern, offset shank, neck about ¾ in. diameter.

No. 7CT $3.50

FARRAND RAPID RULE

Carried Like a Watch

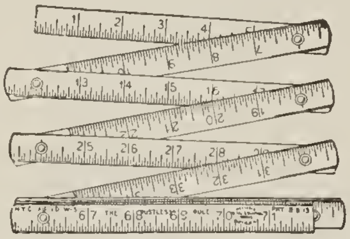

Showing Rule Closed

Showing Rule Partly Extended

Nickel plated for the vest pocket. Rule eight feet long. Will measure inaccessable corners. Marked in 16th or in 10th's of inches.

Ferrand Rapid Rule, f. o. b., K. C. ....each $8.00

RUSTLESS RULES

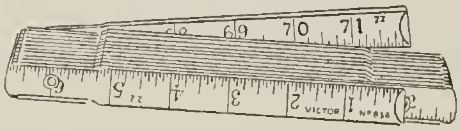


Outside marking; rustless composition metal similar to Aluminum; with 6-inch folds ⅝ inch wide; large black figures stamped in rule; graduated in 16ths; brass tip on each end graduated in 32ds; spring brass joints.

Nos.	4RR	6RR
Length, Feet	4	6
List price, each	$1.85	$2.80

ZIG ZAG RULE

Outside Markings



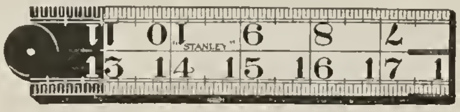
Stanley; white enameled on flexible hardwood; concealed joints.

Nos	753	754	755	756	758
Length, feet	3	4	5	6	8
Weight, lbs.	2¾	2	2½	3	4
Factory list	$0.40	.55	.70	.80	1.10

White enameled on flexible hardwood; marked in 16ths on one side and 10ths on the other. 6 in. long.

No. 9626D—List price, 6 in. $1.50

BLIND MAN'S RULE

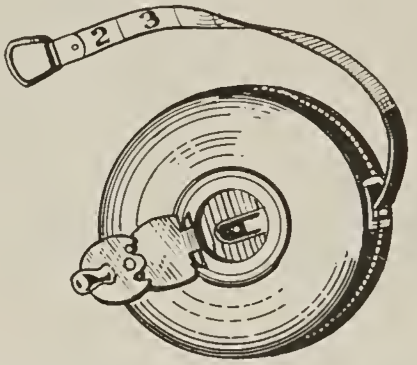


Not bound; square joint

No. 7—2 feet; Blind Man's; square joint; edge plates; marked in 8ths and 16ths inches; 1⅜ inches wide; weight 2 pounds; factory list, each $2.00

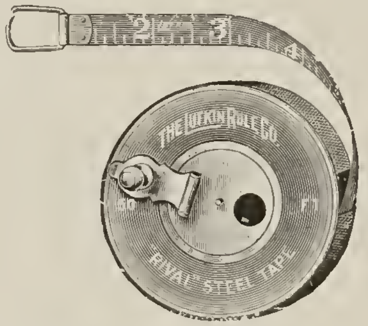
This rule was made to meet the large demand for a rule which could be easily seen in a dim light by workmen with poor eyes. It is, in fact, a rule which will be appreciated by any mechanic.

LINEN TAPE



Metallic; hard leather case; brass double folding automatic flush handle; brass trimmings; ⅝-inch woven linen tape, with metallic warp, marked in 12ths, and links on both sides.

Nos.	603L	605L	606L
Length, feet	50	75	100
Case, Diam., In.	4⅛	5	5½
Weight, pounds	1	1¼	1⅝
Factory List Each	$9.00	10.00	12.00

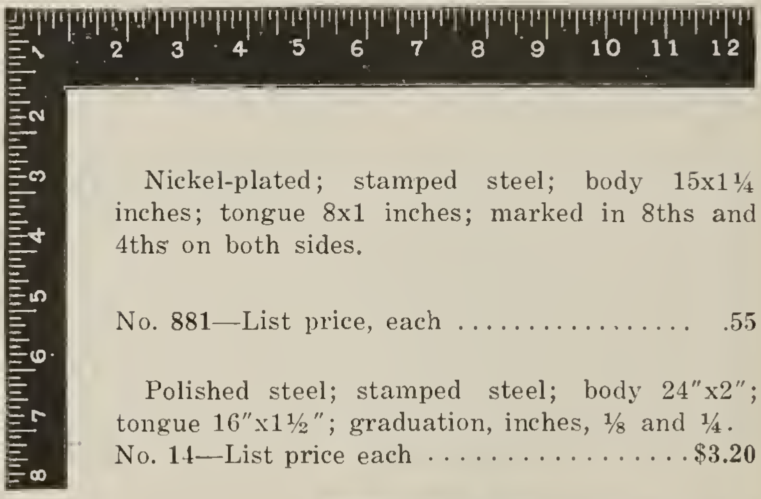


STEEL TAPE

Banner; instantaneous readings; nickel folding handle and trimmings; ⅜-inch steel tape; marked in feet, inches, and eights; one side only.

Nos.	550	553	555	556
Length, Feet	25	50	75	100
Weight, Ozs.	7	12	17	21
List price, each	$5.40	$6.70	$8.80	$11.20

STEEL SQUARES



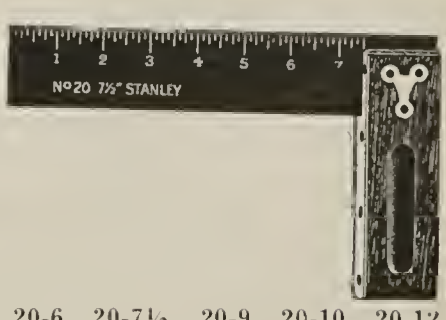
Nickel-plated; stamped steel; body 15x1¼ inches; tongue 8x1 inches; marked in 8ths and 4ths on both sides.

No. 881—List price, each .... .55

Polished steel; stamped steel; body 24"x2"; tongue 16"x1½"; graduation, inches, ⅛ and ¼.

No. 14—List price each $3.20

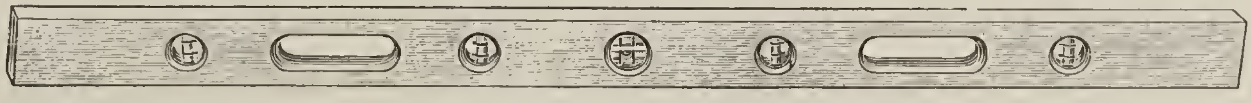
TRY SQUARES



Stanley; Rosewood handle with brass face plate; handy grip; blued steel blades graduated in 8ths inches.

Nos.	20-4½	20-6	20-7½	20-9	20-10	20-12
Blade, Inches.	4½	6	7½	9	10	12
List price, each	.75	.95	$1.05	$1.35	$1.50	$1.80

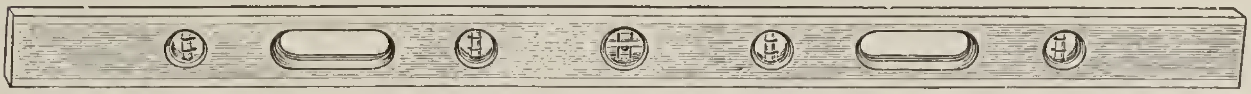
BRICKLAYERS' PLAIN AND BRASS BOUND CERTIFIED PLUMB RULES



No. 1—This Rule is made of white pine, is 4feet long, 2$\frac{5}{8}$ inches wide and 1$\frac{3}{16}$ inches thick. It has four plumbs and two levels. Plumbs or levels either end or edge up, and has two handholes. It is a light and very neat plumb rule.

No. 1—Price	$3.50

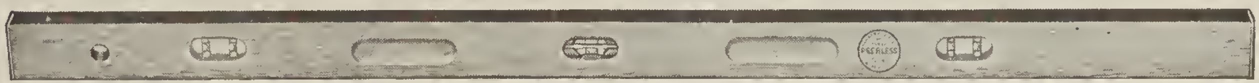
(For the New Torpedo Vial Levels see insert in back end of this catalog.)



No. 2—This Rule is same size as No. 1 and made exactly the same as No. 1, but it is brass bound around all edges and corners, and has Brass End Plates.

No. 2—Price	$5.50

(For the New Torpedo Vial Levels see insert in back end of this catalog.)



No. 20—Solid Mahogany—Brass End Plates Very Narrow and Neat—4 feet long.

Price	$6.50

No. 333—3 piece—White Pine Center with Hardwood Edges, Brass End Plates. Very Norrow and Neat—4 feet long.

Price	$7.25

(For the New Torpedo Vial Levels see insert in back end of this catalog.)

No. 3—White Pine—Brass End Plates. Very Narrow and Neat—4 feet long.

Price	$4.75

(For the New Torpedo Vial Levels see insert in back end of this catalog.)

No. 40—White Pine Brass Bound—Brass End Plates. Very Narrow and Neat—4 feet long.

Price	$6.50

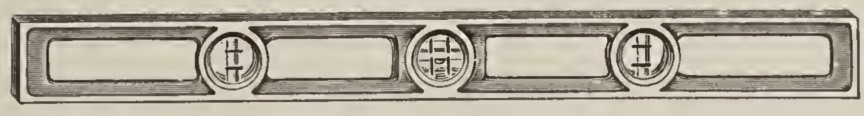
SHORT MASON'S LEVEL

No. 10—White Pine. Very narrow and neat, 12 or 16 inches long.

Price, each	$1.75

GOLDBLATT
CORRECT
CERTIFIED
LEVELS
KANSAS CITY, MO.

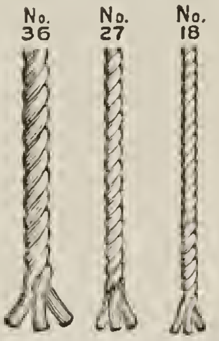
ALUMINUM LEVELS

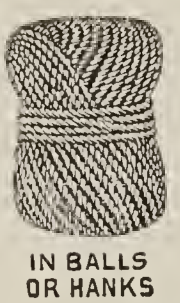


No. 9—Length	12-In.	18-In.	24-In.	28-In.	30-In.	42-In.
Price	$2.75	$3.50	$4.25	$4.75	$5.50	$7.50

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

MASONS' CHALK LINE





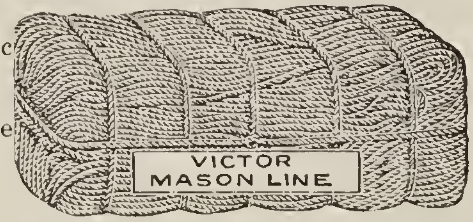
Medium soft, very strong, best quality; in balls. Size 18.

Price, per ball 15c

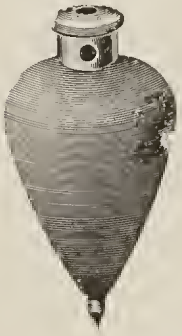
In Hanks
Sizes 18, 27 or 36

Price, per lb. 90c

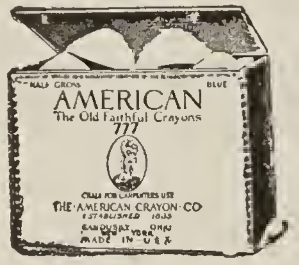
No less than one pound sold.



PLUMB BOBS



CARPENTERS' CHALK



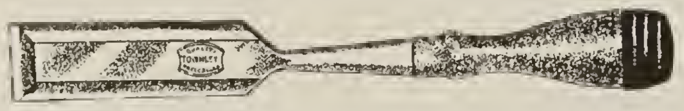
Japanned Cast Iron

Nos.	2	00
Length, Inches	2¾	3½
Diameter, Inches	1½	1¾
Weight, Ounces	9½	18
List price, each	$0.20	$0.40

Hemispherical Shape

Nos.	W	R	B
Colors	White	Red	Blue
Per Gross, list	$3.50	$4.20	$4.20

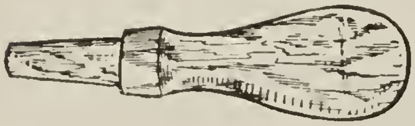
SOCKET POCKET CHISELS



Crucible steel; bevel edge; full polished; length of blade 3¼ inches; leather-capped hickory handle, rosewood stained and varnished.

No. 35—Inches	¼	⅜	½	⅝	¾
Weight, pounds	3	3	3¼	3½	3¾
Factory list, ea. or doz.	$14.00	14.00	14.00	15.50	16.00
No. 35—In.	⅞	1	1¼	1½	1¾	2
Wt. lbs.	4	4½	5¼	6	6½	7¼
Factory list	$18.00	18.50	20.50	22.00	24.00	25.00

CHISEL HANDLES

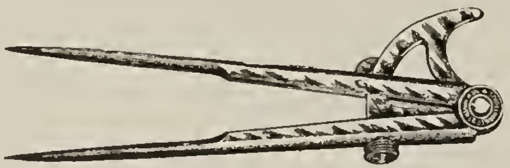


Socket firmer; plain hickory, assorted sizes in a box.

Nos.	610	611
For Chisels, inches	⅛ to 1	⅜ to 2
Per doz.	$1.60	$1.80

One dozen in a box.

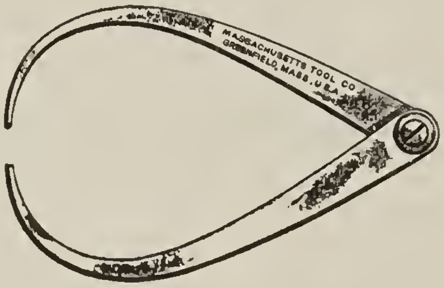
WING DIVIDERS



Forged steel; polished, with brass washers.

Nos.	1-6	1-8	1-10	1-12
Length, inches	6	8	10	12
List price, each	$0.95	$1.20	$1.60	$1.85

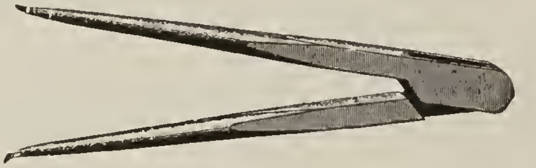
CALIPERS



No. 26—Will caliper a cylinder one-fifth greater than length of caliper.

Stock No.	264	265	266	268	2610	2612	2614
Inches	4	5	6	8	10	12	14
Net wt. per doz. lbs.	¾	1½	2	3½	6	9	13½
F'ct'ry lst ea. Factory list	$0.60	.70	.80	$1.00	1.10	1.20	1.80

FIRM JOINT CALIPERS

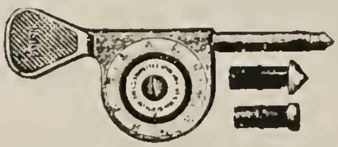


Wrought steel, polished; the stud is squared and fitted to one leg; end of stud threaded for Hexagon Adjustment Nut; Smooth and Uniform Friction is thus secured.

No. 27—Will caliper a chamber twice the length of caliper.

Stock No.	T274	T275	T276	T278	T2710
Factory list, each	$0.60	.70	.80	$1.00	1.10
Inches	4	5	6	8	10
Net. wt. per. doz., lbs.	¾	1½	2	3½	6
Stock No.			T2712	T2714	T2718
Inches			12	14	18
Net. wt. per doz., lbs.			9	13½	21½
Factory List ea.			$1.20	1.80	2.10

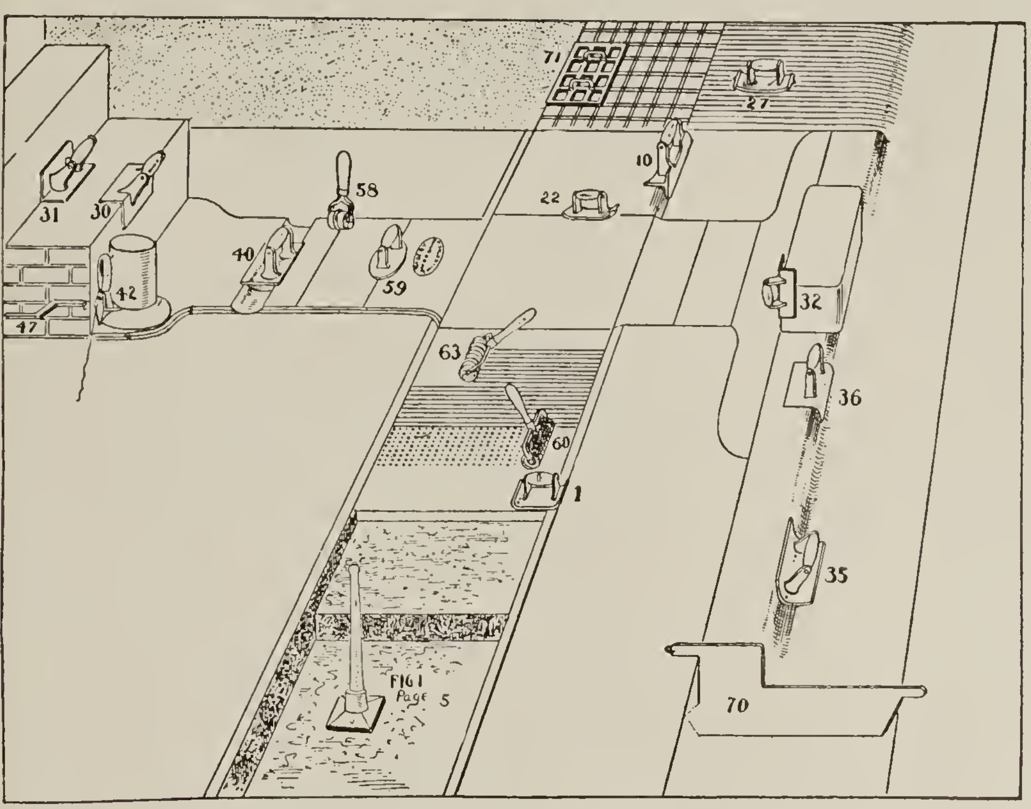
SPEED INDICATOR



Nickel plated; working parts enclosed; dial plate has two rows of figures, reading right or left as the shaft may revolve; rotating disc held by friction and set by pressure of thumb.

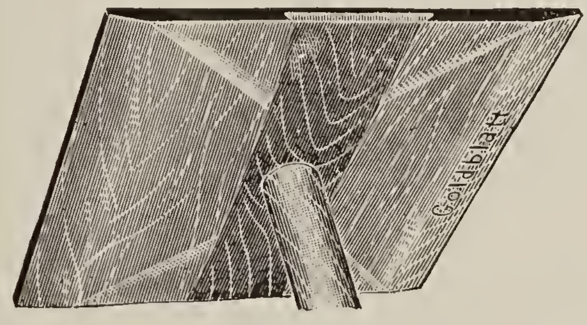
No. 104—High speed, frictionless bearings will not heat; weight 5½ ounces; list $2.25

Cementer's Tools



Showing Application of Different Cement Tools.
Fig. 1 Tamper; Nos. 1 Edger; 10 Step Edger; 22 Jointer; 27 Driveway Groover; 30 Inside Square Angle; 31 Outside Square Angle; 32 Inside Round Angle; 35 Curb Gutter Tool; 36 Curb Tool; 40 Gutter Tool; 42 Radius Tool; 47 Concave Beading Tool; 58 Roller Jointer; 60 Indentation Roller; 63 Line Roller; 70 Gutter Form; 71 Driveway Impression Plate.

PLASTERERS' WOOD HAWKS

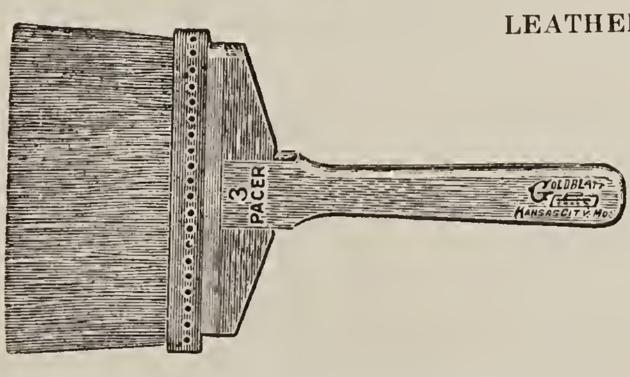


Made of selected soft white pine, which makes the best Wood Hawk. Dove-tailed. Detachable handle.

No. 3—Size 13x13 inches.
Price, each $1.60

LEATHER BOUND PLASTERERS' BRUSHES

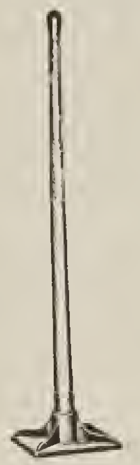
8 Inches Wide



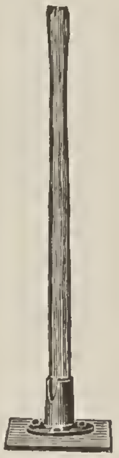
No. 22 Super—2 Row Pure White Bristle	$4.25
No. 32 Super—3 Row Pure White Bristle	4.95
No. 2 Pacer—2 Row Pure White Bristle	5.25
No. 3 Pacer—3 Row Pure White Bristle	6.25
No. 12 Mix—2 Row Grey Hair for Browning	3.25
No. 14 Mix—2 Row Grey Hair for Browing	1.95

The No. 12 and No. 14 are not bristle brushes.

TAMPERS



2W, 5W, 6W



2C, 5C, 6C.

For Dirt

Cast iron; square rammer; four-foot hardwood handle.

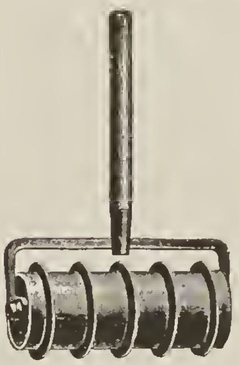
Nos.	2W	5W	6W
Size, inches	6x6	8x8	10x10
Weight, lbs.	12	17	20
List price, each	$2.20	$2.90	$3.40

For Concrete

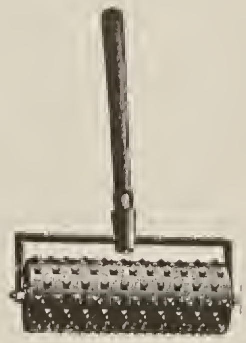
Malleable iron; square rammer, four-foot hardwood handle.

Nos.	2C	5C	6C
Size, inches	8x8	10x10	12x12
Weight, pounds	10	14	17
List price, each	$2.25	$2.70	$3.45

ROLLERS



Nos. 63 and 063



Nos. 60 and 060

Cast bronze; polished; hardwood handle. Driveway; size 3⅝x10 inches; rings ½ inch wide; cuts ⅜ inch deep; rings 2 inches apart; with 19-inch handle.

No. 63—List price, each $16.90

Cast iron; aluminum finish; hardwood handle. Driveway; size 3⅝x10 inches; rings ½ inch wide, 2 inches apart; cuts ⅜ inch deep; with 19-inch handle; weight, 11 pounds.

No. 063—List price, each $5.80

Cast bronze; polished; hardwood handle. Indentation; size 3⅝x10 inches; with 19-inch handle.

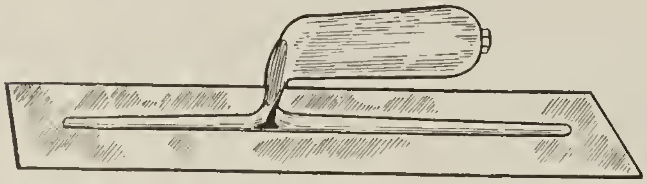
No. 60—List price, each.......$15.60

Cast iron; aluminum finish; hardwood handle. Size 3⅝x10 inches. Weight, 9 pounds.

No. 060—List price, each.......$5.20

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

—CEMENTERS' SIDEWALK TROWELS



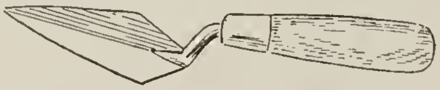
Made narrow and long with extra thin blade, which features are so much desired by expert Cement Finishers and Pavement Workers. Same trowel as shown on page 8 this catalog.

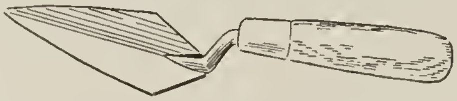
No. 2CF—Size	4x11	4x12	4x14	4x16	4x18
Price, each	$2.85	$2.95	$3.25	$3.50	$3.75

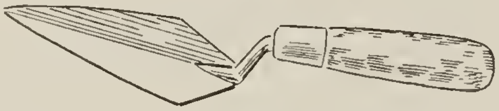
POINTING TROWELS

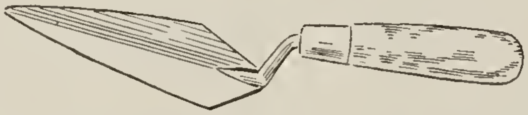
The Kind That Are Flexible, Yet Firm—The Handles Stay On Too

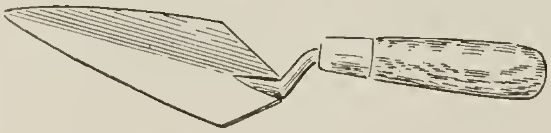
Please do not compare these Pointing Trowels with the ordinary kind.









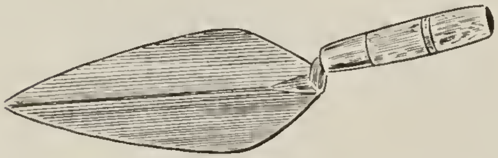


No. 10

4 in.	each	$0.40
4½ in.	each	.50
5 in.	each	.60
5½ in.	each	.70
6 in.	each	.80

BRICKLAYERS' TROWELS

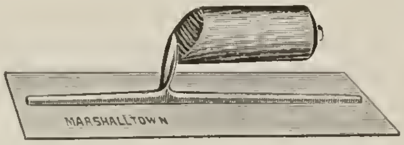
Eastern or Philadelphia Pattern



When this pattern is ordered, state whether the 5″ or 5½″ heel is wanted.

No. 112—Size, inches	11	11½	12	13
Price, each	$2.40	2.50	2.60	2.75

PLASTERING TROWEL

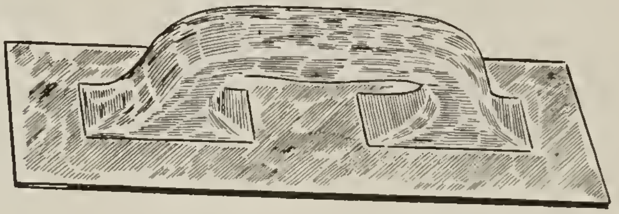


Crucible spring steel blade; 22 gauge; highly polished; twelve rivets; hardened steel mountings; black enameled wood handle.

Nos.	MB4	MB5	MB6
Blade, inches	11½	12	11½
Width, inches	4¾	4¾	5

List price, each $2.85

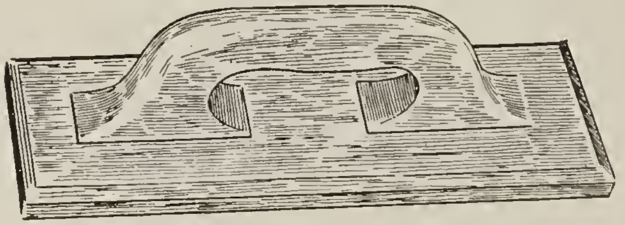
ALUMINUM FLOAT



A light float of good wearing qualities. 11 in. long, 4½ in. wide.

No. 52—Smooth face—Price each, ... $1.35

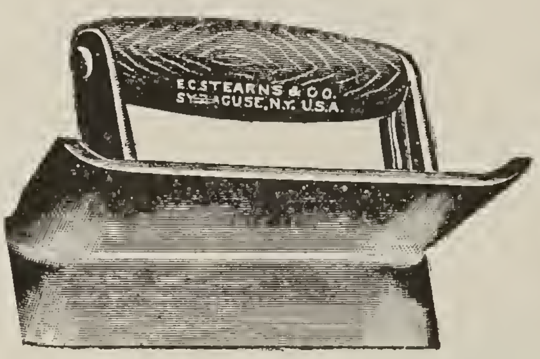
CEMENTER'S WOOD FLOATS



Made of Selected Soft Pine

No.	10	11
Size	4½x12	4½x15
Price, each	65c	75c

SQUARE EDGER



Cast iron aluminum finish; polished face; hardwood handles. Size 6x3 inches.

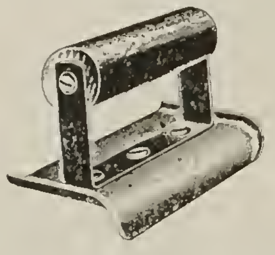
No. 114—List price, each 90c

DOUBLE END JOINTER

Cast iron, aluminum finish; polished face and edges; hardwood handle. Size 2¼x6 inches; cut ½ inch deep.

No. 012—List price, each $0.60

STEEL EDGER

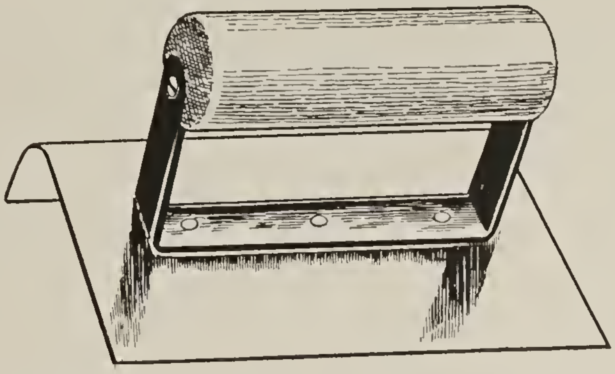


Trowel steel blade; polished face; steel shank; hardwood handle. Size, 3x6 inches; ¾-inch turned edge; ¾-inch radius.

No. 136—List price, each $0.85

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

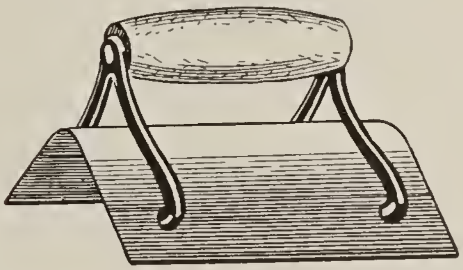
CEMENTER'S CURB EDGER



Straight on both ends. Most suitaible as a Curb Edger. Size 6 inches long; 4 inches wide. Depth of side 2 inches. Radius 1 inch. Made of trowel steel.

No. 36—Price, each $1.75

STEP FINISHING TOOLS



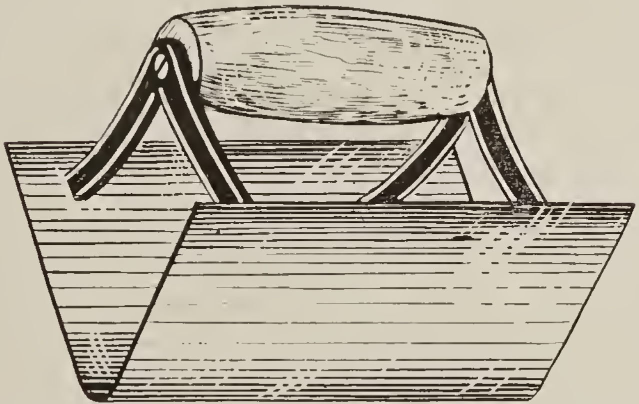
Made of Trowel Steel—Either Round or Square.
Length, 6 inches; Sides 2½ inches.

No. C38 Outside Square, each $1.25

Made with either ¼ or ½-inch radius. When ordering please state what radius is wanted.

No. C38R—Outside, Round, each $1.25

INSIDE ANGLE
Round or Square



No. C39—Inside Square, each .... .95

Made with either ¼ or ½-inch radius. When ordering please please state what radius is wanted.

No. C39R—Inside Round, each....................... $1.25

CURB AND GUTTER FINISHING TOOLS

Top, 5½ inches deep. Bottom, 2 inches deep. Radius, 1 inch; 7 inches long.

No. 1—Price, each ... $2.50
6 inches high

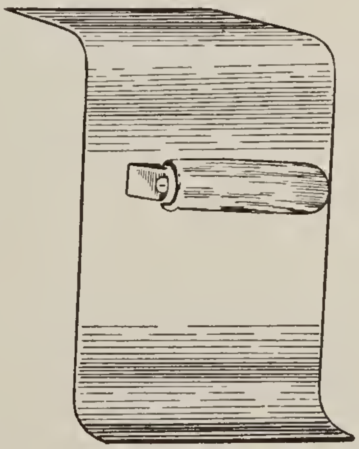
No. 2—Price, each ... $2.75
10 inches high

Top and bottom, 2 inches deep. Radius, 1 inch; 7 inches long.

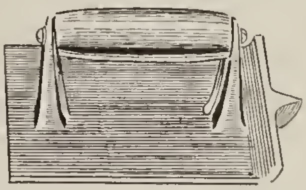
No. 3—Price, each ... $2.25
6 inches high

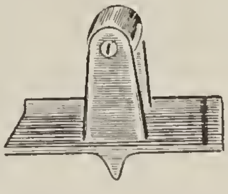
No. 4—Price, each ... $2.50
10 inches high

Special sizes or shapes made to order.



LARGE BIT GROOVERS



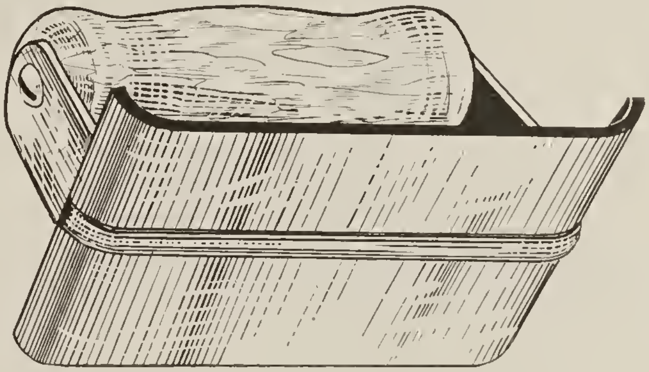


Straight on one end—Size 6 inches long by 4¾ inches wide; one of our very popular number. Made in Bronze.

No. 29B—Cast Bronze. Price, each $1.95
Same as above, but size 6″ x 6″

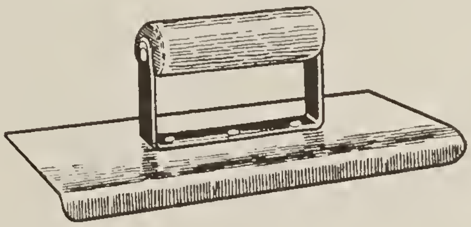
No. 30B—Cast Bronze. Price each $2.25

SMALL BIT GROOVERS



Where colored cement floors and walks are wanted marked off in imitation of tile. This Trowel Steel Groover with extra small bit is most successfully used, 6 inches long, 3 inches wide No. 6T—Price, each (bit only ⅛″ deep) $1.00

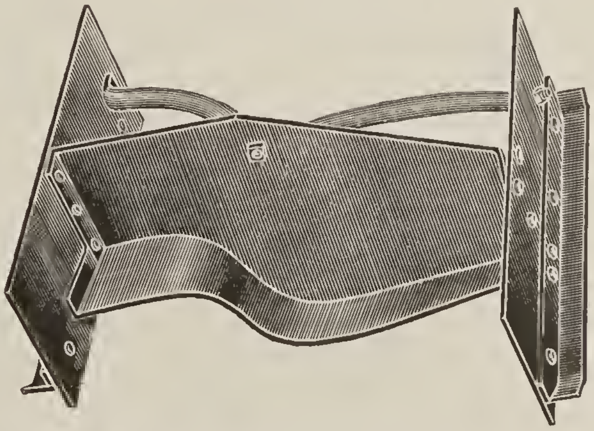
CEMENTER'S SIDEWALK EDGERS
All Sizes



Made of Trowel Steel—Straight Ends.

	Length	Width	Depth of edge	Radius	Each
No. 1	5 in.	2½ in.	¼ in.	¼ in.	75c
No. 2	5½ in.	3 in.	½ in.	¼ in.	85c
No. 3	6 in.	3½ in.	½ in.	⅜ in.	90c
No. 4	7 in.	4 in.	½ in.	½ in.	95c

CURB AND GUTTER MULE



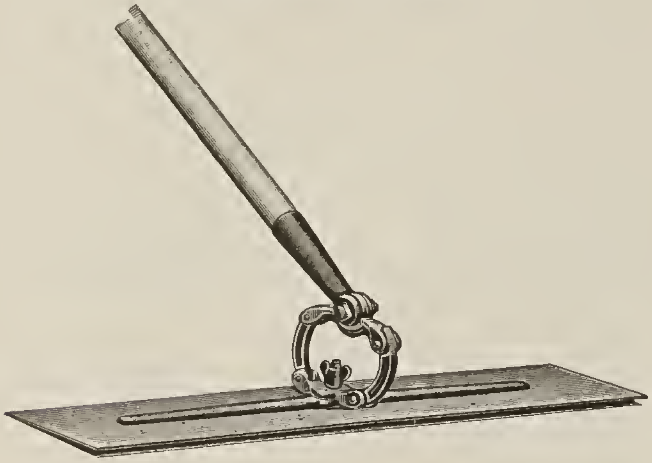
Curb and Gutter Mule. Specify Right or Left hand.
Victor all steel curb and gutter mule made special to fit your job, 2-day shipment............................. $25.00

In ordering mule be sure to send us cross section drawing of your curb and gutter.

Victor Long Handle Reverse S. Trowel............. $8.50
Every order for a mule should include one of these.

Abram Double Action; the long-handled feature, of course, eliminates a lot of back-breaking attitudes, but the double action device is the feature that really makes the big reduction in the amount of effort put forth to do a given amount of work; the position of the operator doesn't have to be changed so often; all work within reach (a sidewalk, for instance), may be finished from one side; the automatic double action absolutely prevents the tool from digging into the concrete as the trowel is pushed the forward edge of the blade is tilted slightly; as the trowel is pulled this action is reversed and the rear edge of the blade is raised; extra grade white ash handles.

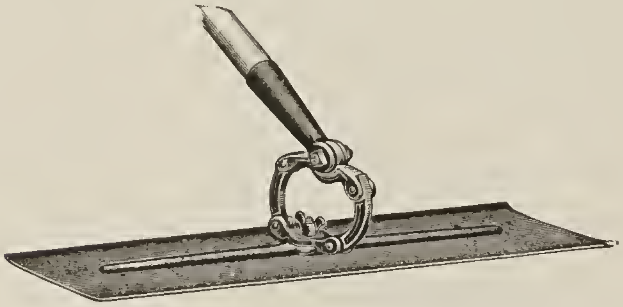
FINISHING TROWEL



Steel. 24x5 inches; 6-foot handle; weight, 5 lbs.

No. 4B—List price, each $7.95

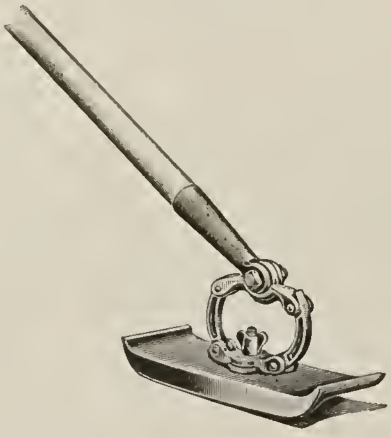
FLOAT



Steel, ⅛-inch thick; beveled face, 24x6 inches; 6-foot handle; weight, 8 pounds.

No. 4—List price, each $7.95

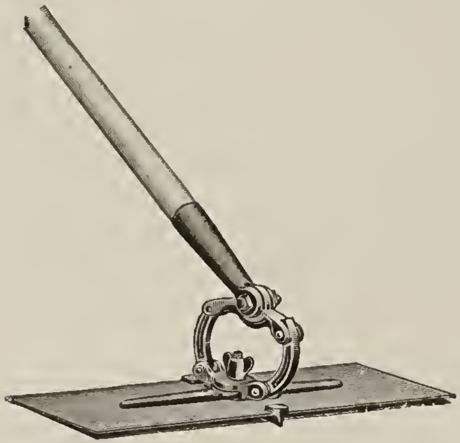
EDGER



Iron; nickel plated; 10x3¼ inches; with ⅞-inch form face; about ⅜-inch radius; 6-foot handle; weight, 5 pounds

No. 30—List price, —each $6.00

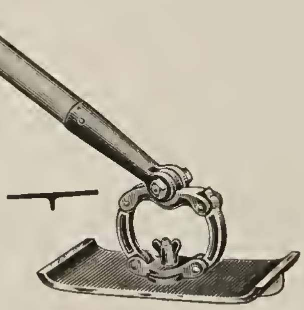
JOINTER



Steel, 16x5 inches; 6-foot handle; weight, 5 lbs.

No. 2—List price, each $6.90

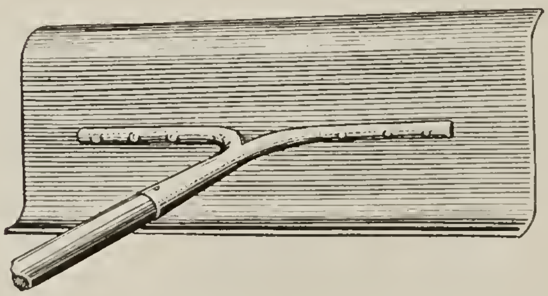
BEADER



Iron, nickel plated, 10x3¼ inches; cuts thin and shallow bead for marking or blocking out floors; weight, 5 pounds.

No. 25—List price, each $6.00

SPECIAL CONCRETE SPREADING HOE

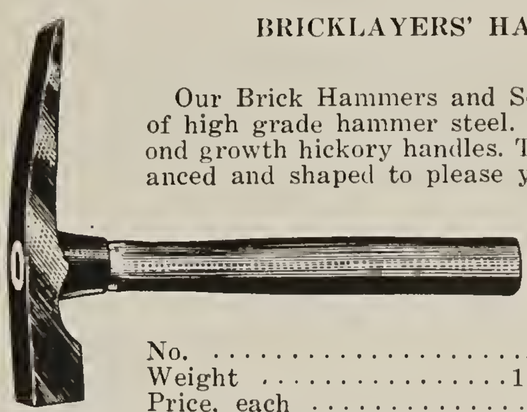


No. 50—Made S shaped for either pushing —or pulling the concrete, better than concrete rake, as it spreads without separating the coarse aggregate from the fine. Size of blade, 18 inches long, 7 inches wide, with 6 foot handle. This tool should be on every job.

Price Each, F. O. B. Kansas City $4.50

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

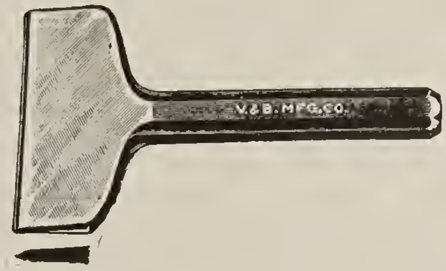
BRICKLAYERS' HAMMERS



Our Brick Hammers and Scutches are made of high grade hammer steel. We use only second growth hickory handles. They are well balanced and shaped to please you.

No.	355	356
Weight	1¼ lbs.	1¾ lbs.
Price, each	$1.50	$1.25

BRICK CHISELS



Solid forged steel; double bevel; oil tempered; polished head and blade; oil finish body.

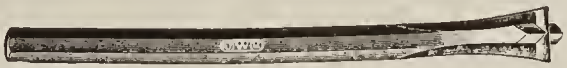
Nos.	42	48	54
Bit, Inches,	3½	4	4½
List price, each	$1.15	$1.20	$1.25

BRICKLAYERS' SETS

Solid forged steel; single bevel; oil tempered, polished head and blade; oil finish body.

Nos.	48S	54S
Bit, Inches	4	4½
List price, each	$1.20	$1.25

STAR DRILLS



Best octagon tool steel; carefully tempered; for cement, brick or stone work.

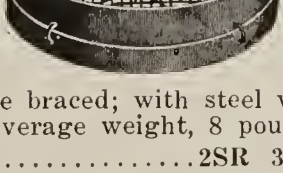
12-Inch Size

Nos.	250	251	252	253	254	255	257
Diameter, Inches	¼	⁵⁄₁₆	⅜	½	⅝	¾	1
Length, Inches	12	12	12	12	12	12	12
List price, each	$0.50	.50	.50	.55	.65	.80	1.00

18-inch Size

Nos.	258	259	260	261	262	263
Diameter, Inches	⅜	½	⅝	¾	⅞	1
Length, Inches	18	18	18	18	18	18
List price, each	$0.60	.70	.80	1.00	1.10	1.30

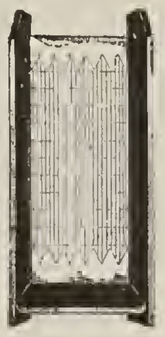
SAND RIDDLES



Wood rim; wire braced; with steel wire bottom; diameter 17 inches; average weight, 8 pounds.

Nos.	2SR	3SR	4SR	5SR	6SR
Mesh	2	3	4	5	6
Nos.	7SR	8SR	10SR	12SR	
Mesh	7	8	10	12	
All sizes, list price, each					$1.40

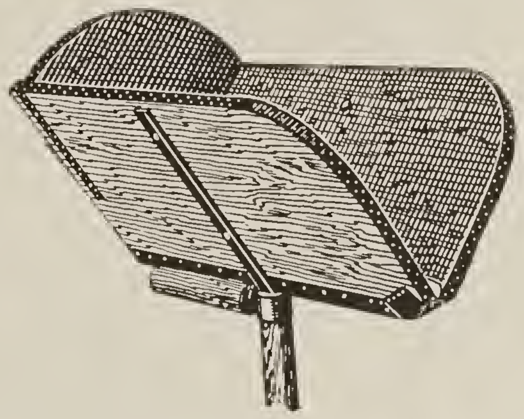
SAND SCREENS



Hardwood frame; steel mesh wires; 5½ feet; painted.

Nos.	4
Mesh	4
Weight, pounds	23
List price, each	$9.00

WOOD MORTAR HODS



This Hod is made of selected white pine. It is well ironed and water tight. Inside dimensions are as follows: Sides are 22 inches long and 13 inches wide. Width across the top is 14 inches. Handle is 4 feet long. Our Hods are balanced in such a manner that makes them easier to carry than the average hod, and they are demanded by hod carriers everywhere. Please do not compare our Hod with the ordinary kinds.

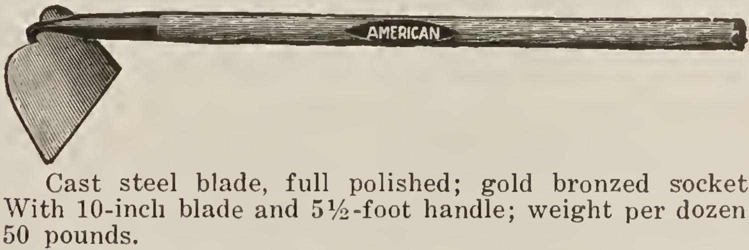
No. 100—Price, each, F. O. B. Kansas City.........$5.70

WOOD BRICK HODS

Our wood Brick-Hod is made of selected white pine, well ironed and otherwise the same as the Mortar-Hod in general workmanship. Inside measurements are as follows: Sides are 20¼ inches long and 7 inches wide. Width across the top is 10 in.

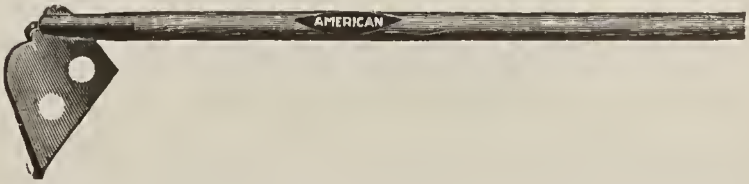
No. 200—Price, each, F. O. B. Kansas City........$3.60

MORTAR HOES



Cast steel blade, full polished; gold bronzed socket. With 10-inch blade and 5½-foot handle; weight per dozen, 50 pounds.

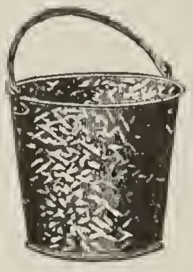
No. S10—List price, each $2.25



Cast steel blade; full polished; open blade; gold bronzed socket. With 10-inch blade and 6-foot handle; weight per dozen 48 pounds.

No. SM210—List price, each $2.45

WATER PAILS



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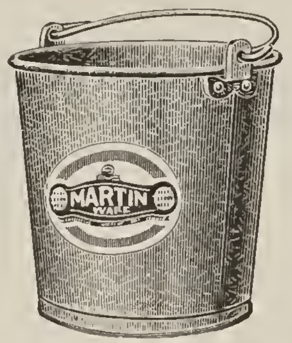


G312

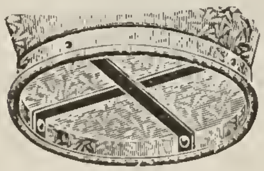
Plain body; with bail.

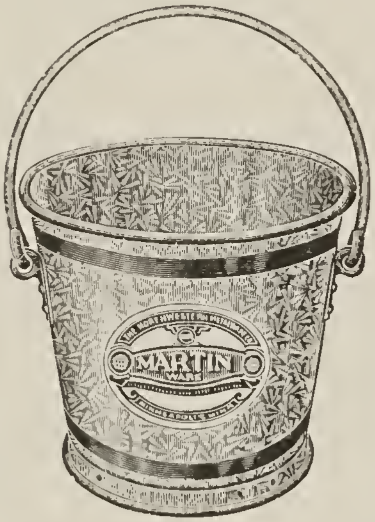
Nos.	82	102	122	142
Quarts	8	10	12	14
Inches	9¾x8½	10½x8¾	1x1	11½x10½
List price, each	$0.35	$0.40	$0.45	$0.50

GALVANIZED PAILS

No. 26 gauge, galvanized after making, ¼ inch wire at top, No. 5 wire bail, wood grip, dome bottom.

Nos.	G312	G314	G316
Quarts	12	14	16
Size	12x10	12½x10½	13x11
List price, each	$0.95	$1.05	$1.15



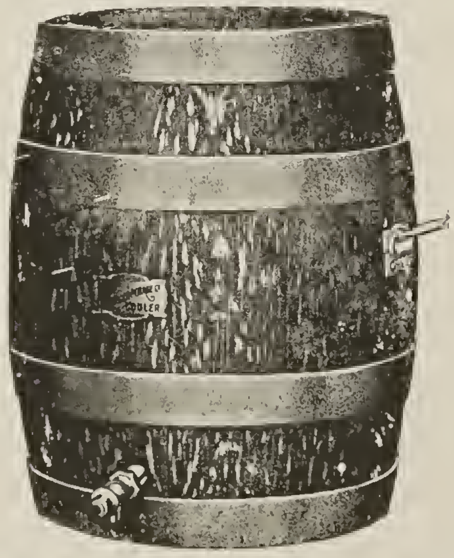


Bottom reinforced with extra heavy strips.

26 gauge, galvanized after making, ¼ inch wire at top, 3/32 inch wire bail, heavy forked malleable ears, dome bottom.

Nos.	G412	G414
Quarts	12	14
Each	$1.45	$1.60

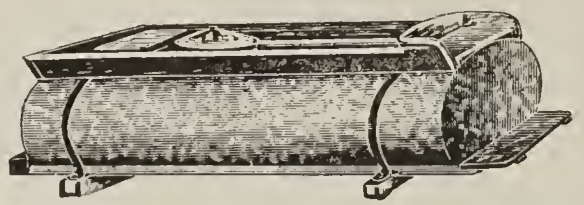
RAILROAD WATER KEGS



Heavy solid oak; polished and varnished outside; six hoops; side handles, hinged top.

Nos.	5RR	10RR	15RR	20RR
Capacity, gallons	5	10	26	30
Weight, pounds	15	20	26	30
List price, each	$3.30	$4 55	$4.50	$4.80

WAGON TANKS



Special oval; No. 16 gauge galvanized steel body, No. 14 gauge galvanized steel gauge heads; painted and striped; with woodwork.

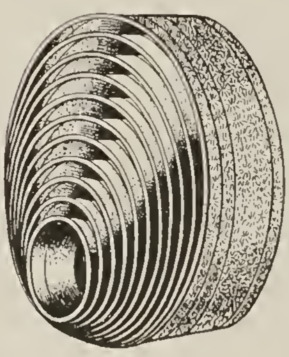
It is mounted on 4x6-inch sills and 5x6-inch bolsters, made of a selected grade of yellow pine, and will fit any standard farm gear. Has 2x8-inch woodwork bolted on around top, equipped with seat and pumpboard; is also equipped with 2-inch brass flange outlet, pipe threaded, with plug, riveted on the rear end; 14 inch manhole with cover, and bulkhead to prevent splashing while in motion.

Either soldered and riveted construction or welded, specify.

Nos.	Capacity, Barrels	Length, Feet	Weight, Pounds	Factory List
10TO	10	8	550	95.00
10TO	12	8	570	103.00
15TO	15	8	600	122.00

ROUND STOCK TANKS

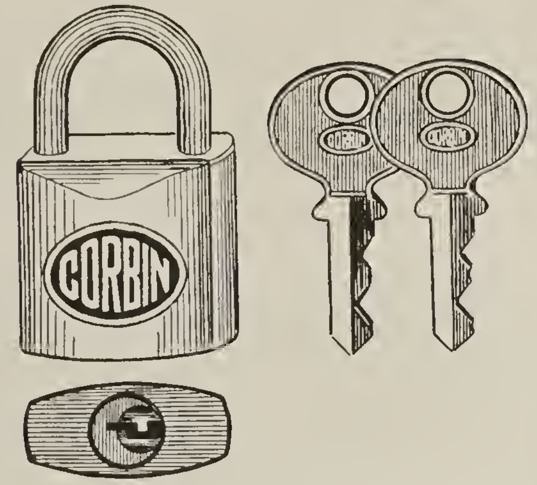
Galvanized Steel; With Patent Tube Top



So constructed that they will stand hard usage and are made with double lock seam gottom and patent tube top. Made of No. 20 gauge galvanized steel, unless otherwise ordered. They have the heavy band shrunk on bottom so as to protct them while in transit and in use.

Nos.	Diameter Feet	Height Feet	Capacity, Bbls.	Weight Pounds	Factory List, Each
R32	3	2	3	52	12.30
R325	3	2½	3¾	58	14.10
R33	3	3	4½	70	15.90
R42	4	2	5	75	15.80
R425	4	2½	6¾	85	18.00
R43	4	3	8	95	20.40
R52	5	2	8½	98	20.00
R525	5	2½	10¾	108	23.00
R53	5	3	13	120	26.10
R62	6	2	12½	123	25.50
R625	6	2½	15¾	138	29.40
R63	6	3	19	153	33.30
R72	7	2	17¼	155	32.30
R725	7	2½	21½	173	36.30
R73	7	3	26	191	40.40
R82	8	2	22¾	188	42.00
R825	8	2½	28½	210	62.80
R83	8	3	34¼	230	68.90
R92	9	2	29	250	67.90
R925	9	2½	36¼	275	74.00
R93	9	3	43½	295	80.10
R102	10	2	36	292	79.00
R103	10	3	54	342	95.20
R112	11	2	43¾	335	93.20
R113	11	3	65½	395	111.40
R122	12	2	52	380	108.40
R123	12	3	78¼	440	128.70
R133	13	3	92	496	147.80
R143	14	3	107	560	170.10
R153	15	3	123	630	196.40
R163	16	3	140	700	222.80

PADLOCKS



Polished solid brass case; self-locking galvanized steel shackle.

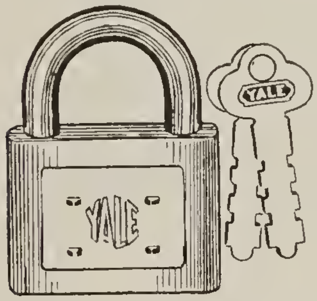
No. 2879A—Corbin; size 1x$\frac{15}{16}$ inch; two nickel bronze keys with gold plated bows; each lock in an individual box; weight 2⅛ pounds. Per each . . $3.30

One-half dozen in a box

No. 2880A—Size 1⅜x1$\frac{3}{16}$ inches; otherwise same as 2879A; weight 4 pounds. Per each. $3.70

No. 2881A—Size 1½x1½ inches; otherwise same as 2879A; weight, 5½ pounds. Per each $4.50

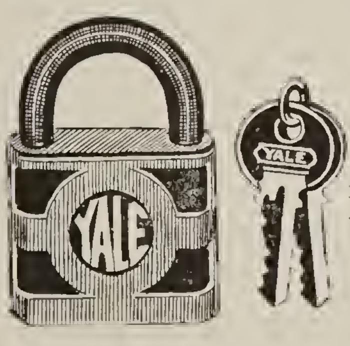
No. 2882A—Size 1¾x1½ inches; otherwise same as 2879A; weight 8½ pounds. Per each, ... $5.50



Cast iron case, Bower-Barffed finish panels, wrought steel, Brass-platet; not masterkeyed; warded.

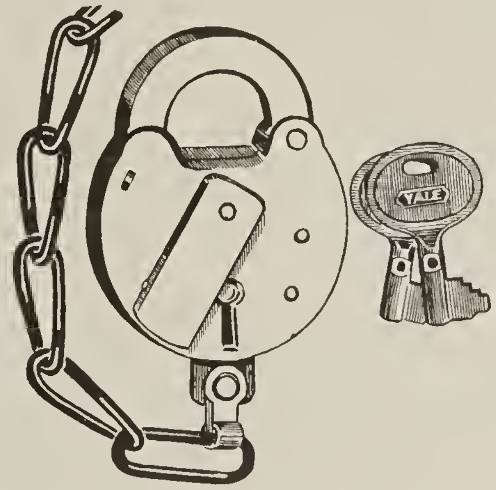
No. 223—Yale & Towne; width of case 1½ inches; six changes; two flat steel, nickel-plated keys. Each $0.80

No. 225A—Yale & Towne, width of case 2 inches; Keyed alike; two flat steel, nickeled-plated keys. Each $1.00



Cast bronze case; steel case hardened self-locking spring shackle; 5 pin tumblers.

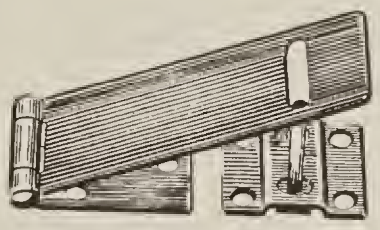
No. 850—Polished steel shackle; width of case at shackle 2 inches; five pin tumblers; changes unlimited; two nickel bronce paracentric keys, with gold plated bows;can be masterkeyed; each lock in paper box. Each $2.90



Heavy wrought steel case, galvanized, malleable iron shackle, galvanized, four brass lever tumblers.

No. 1207½—Yale & Towne, with 14-inch galvanized chain; width of case, 2½ inches, 580 key changes, two list No. 907 keys, width of shackle inside, 1 inch; can be masterkeyed. Each $2.50

HASPS



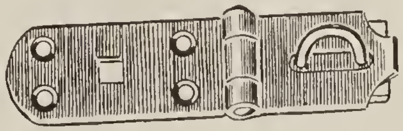
Safety Wrought Steel

Nos.	915-3½	915-4½	915-6
Hasp, size, ins.	1½x3½	1½x4½	1⅞x6
Extreme L'gth, ins.	5	6	6⅞
Hinge Plate, ins.	1½x1½	2¼x1½	3x1⅞
Staple Plate, ins.	1¾x1½	1¾x1½	2x2¼
Weight, pounds	3½	4½	5½
Factory list, doz	3.15	4.20	5.95

One dozen in a box, without screws

Nos.	SC915-3½	SC915-4½	SC915-6
Per dozen	$2.00	3.00	3.15

One in a box with screws



Wrought Steel; extra heavy; bright; in bulk; without screws.

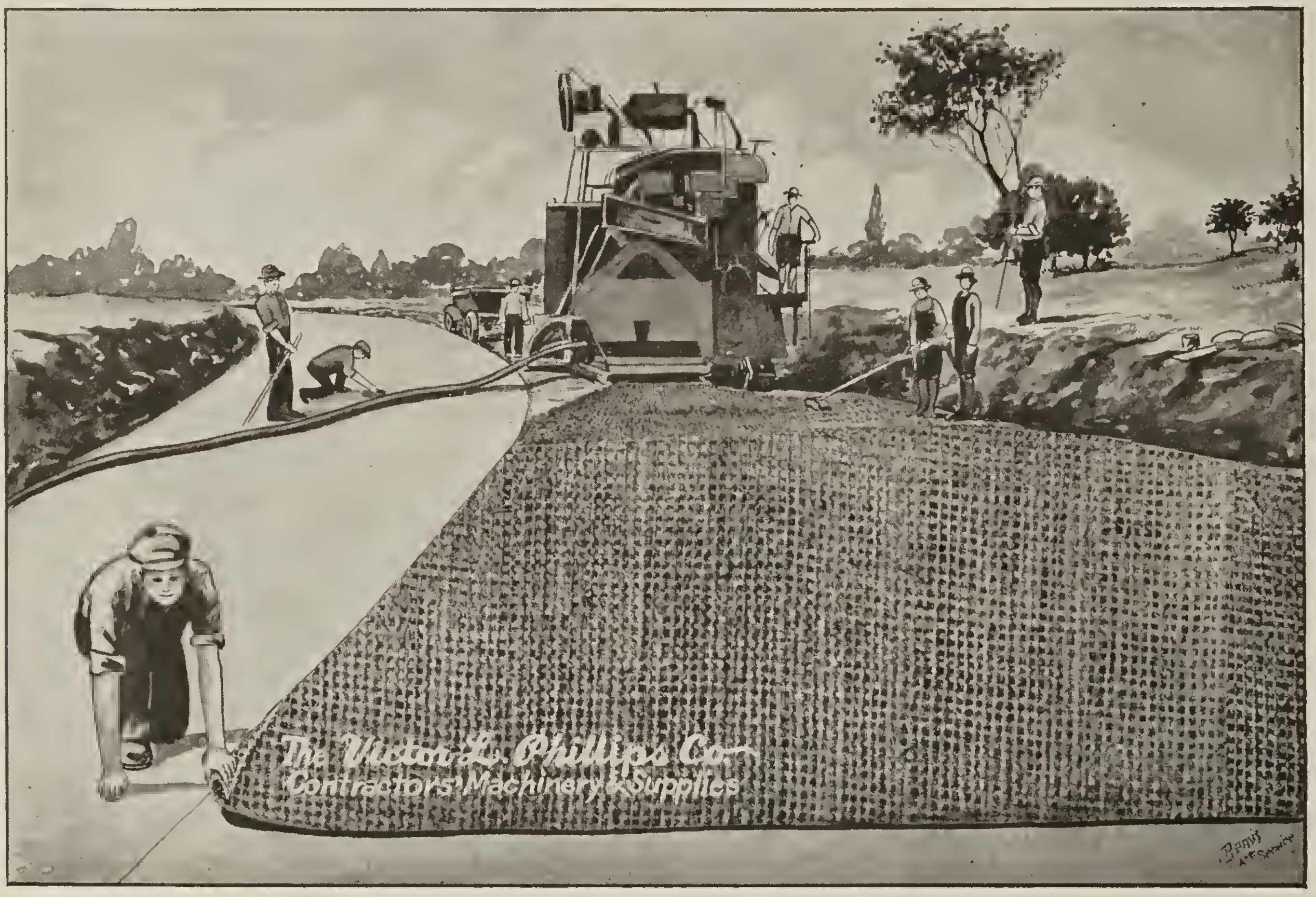
No.	941
Extreme Length, inches	7½
Hasp, size, inches	1x1¾
Hinge plate, inches	1x2½
Staple Plate, inches	1x1½
Weight, pounds	12
Factory list, doz.	$6.75

Wrought steel; extra heavy; galvanized with brass pins; with galvanized screws. Otherwise same as 941.

No.	1356
Factory list, doz.	$10.00

One-half dozen in a box, with screws.

BURLAP ROAD COVERS



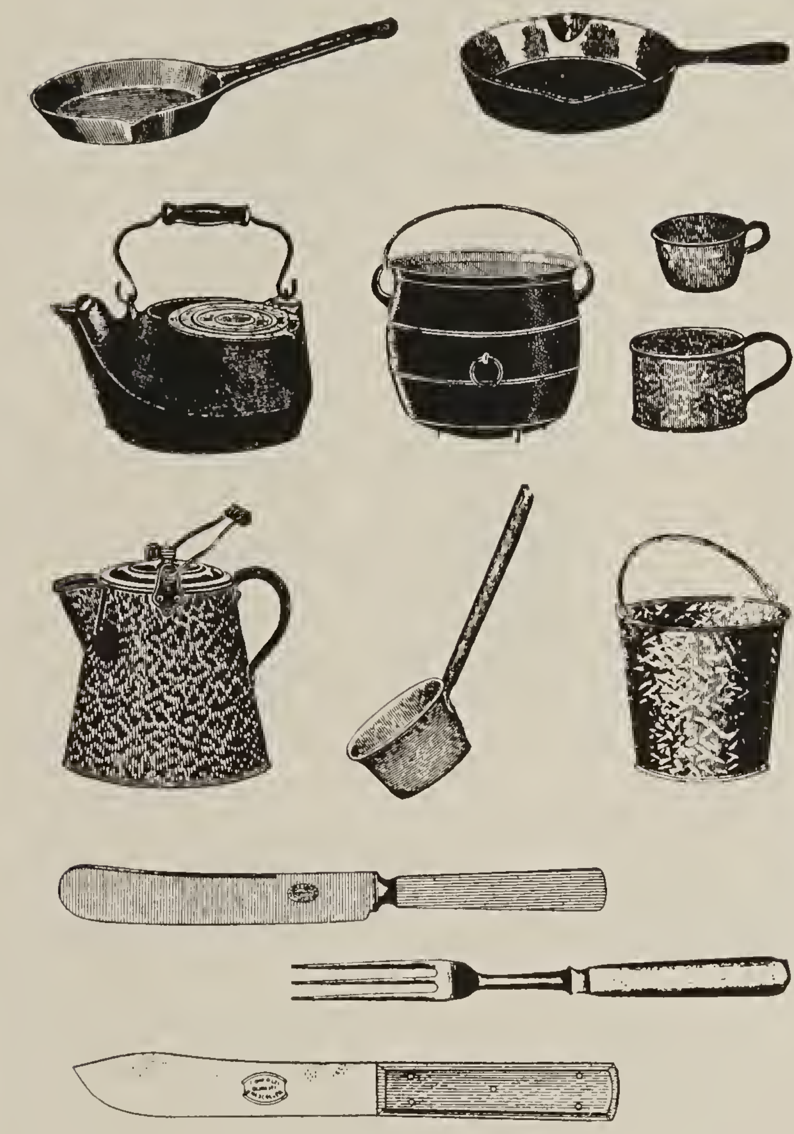
We carry in Kansas City stock a complete line of burlap road covers in eight ounce, ten ounce, and twelve ounce weights. These covers are made in any standard size or are made on 500-foot rolls for use on a covering machine.

Burlap is similar in appearance whether it is of a good or very poor grade. Good grade burlap will give long service, where a poor grade will tear the first time it is taken up from the slab.

Our burlap is purchased after a very careful examination and analysis. We buy in carload lots to insure getting the same quality. The burlap we sell is all stamped with our name and it insures the quality of the cover. When you need covers for your pavement, wire us for immediate shipment.

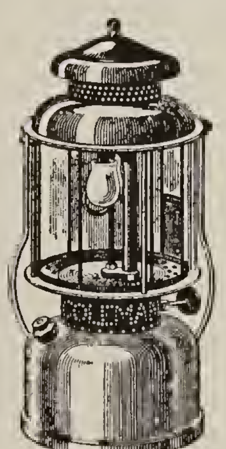
Burlap must be taken care of if it is to give lasting and satisfactory service. Burlap which has been used in curing pavement must not be allowed to lie around and mould or it will soon tear apart. Particular care should be taken to keeping burlap in a useful condition and with all ordinary precautions, our covers will outlast any cover on the market.

COOKING UTENSILS AND CAMP SUPPLIES



Space does not permit individual listing of all our line of cooking utensils and camp supplies, but we are prepared to furnish everything for the camp, and make immediate shipment from Kansas City stock. Send us your requirements. Ask us for prices.

COLEMAN QUICK LITE LANTERN

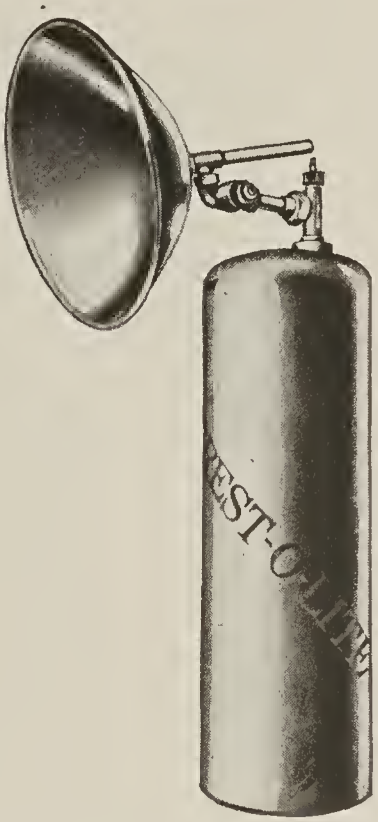


No. L327—Lantern; operates like the Quick Lite lamps; use same type of burner, generator and mantles; gives same wonderful brilliance; mica chimney makes it wind-proof, storm-proof, bug-proof; easy to keep ready for use; no wicks to trim, no chimneys to clean; fount holds two pints of gasoline—enough for 12 to 15 hours of brilliant lighting service; one lantern in a carton, complete with chimney, two mantles, pump, wrench, cleaning pick and extra generator; height over all 14 inches; shipping weight 6 pounds.

Coleman; "Quick-Lite"; heavy brass fount, nickel plated; match lighting, burns gasoline; 300 candle power. Each $12.00

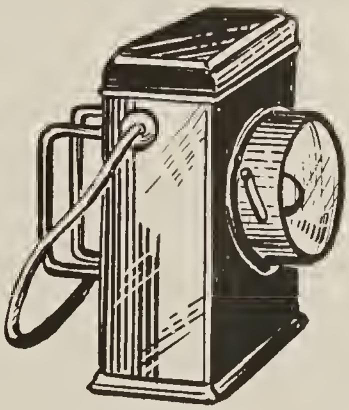
PORTABLE FLOOD LIGHT

This is just the light for your night repair job. Will burn from 40 to 55 hours. 5000 candle power, easy to light and light in weight. Will pierce through rain, dust, fog, or smoke, which makes it efficient under the most severe condition. Burns Prest-O-Lite gas.



Light complete with 40 cu. ft. tank.	$30.00
Light reflector complete with fittings, less tank Each	$15.00
Tank only	15.00
Tank Recharge	3.00

ELECTRIC LANTERN



This lantern gives more light than ordinary flashlights. Uses two common No. 6 Dry Cells, any make. Case made of stamped steel, size 2¾ 7⅝-x 5½ ins. Red enameled inside and outside. Fitted with 2.4 volt Mazda clear bulb. Silver plated reflector. Oval shaped clear glass lens, Diam. 3¼ ins. Nickel plated stamped steel removable rim. Thumb push switch. Red enameled steel wire folding grip handles allowing lantern to hang flush with wall. Weight 2¼ lbs.

No. 10—Without batteries. Each $3.50

OIL HEATING STOVES AND TANK HEATERS

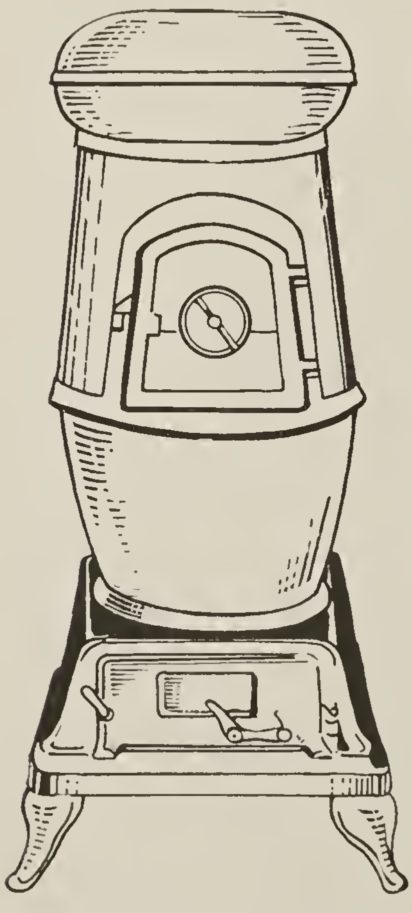
The only oil burning stove employing the air circulating principle—note the large opening in the center of the stove—the cold air is constantly drawn up through this opening and heated, arises to the ceiling and as it gradually cools, drops to the floor again where it once more is drawn through the central heating chamber, and in this way the air is continually changed, resulting in an even heat throughout the entire room.

The burner will burn high or low on either distillate or kerosene, lights as easy as gas and makes no trouble. It is an ideal heater for small store rooms, camps, bunkhouses, etc.

Size: 20 inches wide, 22 inches high, 32 inches long. Top and bottom made of cast iron; sides 20-gauge sheet iron.

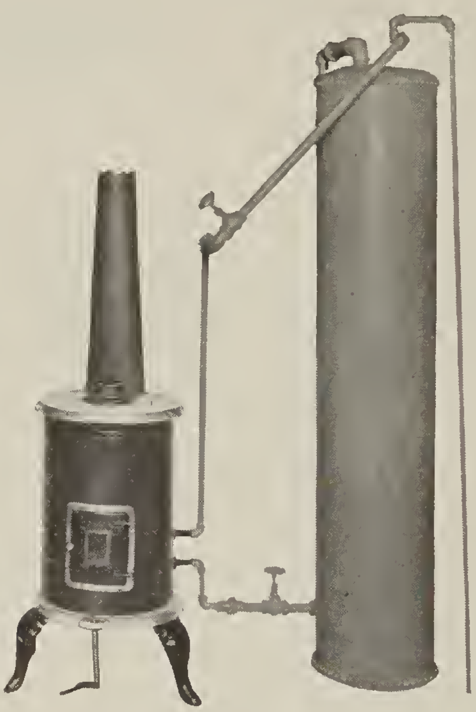
No. 7—Complete with burner and valve, but less fuel tank $60.00

WAREHOUSE STOVE



This stove is made extra heavy for construction camps, bunkhouses, warehouses, etc.

Made in several sizes to meet your requirements. Especially close fitting for safety. Made to burn coal or gas. Price on request.



The stove is 14″ in diameter by 20″ high, cast top and bottom and drum of heavy sheet metal. Body painted aluminum, top and bottom black enamel. Neat looking fire door with mica glass window.

As a water heater it comes complete with burner installed, oil regulating needle valve, also with water coil installed with ¾″ pipe connections ready to be attached to your supply tank.

No. 9—Heater only with valve and burner, but less fuel tank and water heater coils. Packed ready for shipment. $40.00

No 9—Heater complete with valve and burner, less fuel tank but with water heater coils. $50.00

OIL BURNERS FOR HEATING STOVES

Oil burners for heating stoves are made in two sizes.

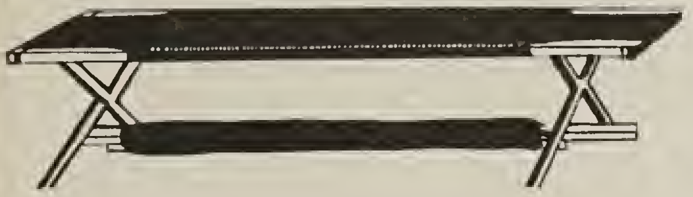
No. 4—Burners are made to be used in cook stoves and in small heating stoves up to 14 inches in diameter.

No. 8—Burners should be used in heating stoves larger than 14 inches in diameter.

No. 4—Burner complete with needle valve . . $16.00

No. 8—Burner complete with needle valve . . 20.00

COTS



Our cots are of the army or trunk style, which is the most popular and useful kind of canvas cot made.

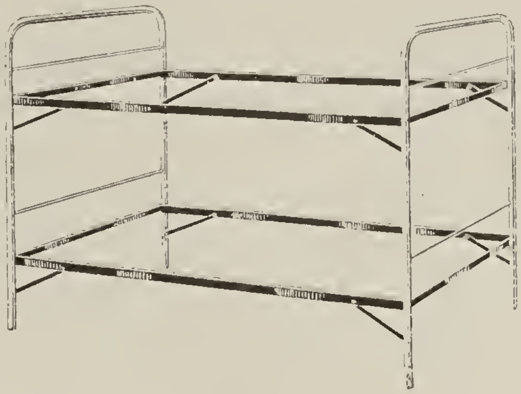
Our cots are made of white ash frames with steel fittings and reinforcements at every moveable part. They are covered with a heavy, specially woven duck which does not stretch, letting the one who is using the cot sag down on the cross rails.

These cots are 27″ wide and 6′ 6″ long.

BEDDING

We can also supply blankets, matresses, bed sacks, pillows and sheets. See our price list for descriptions of these articles.

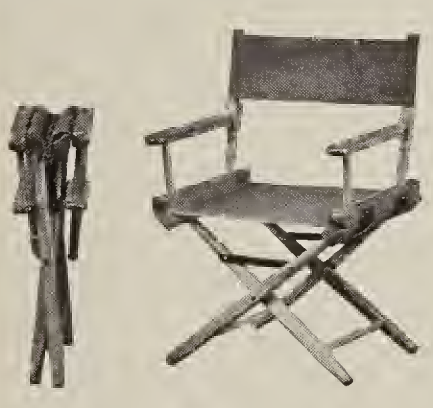
BUNKS



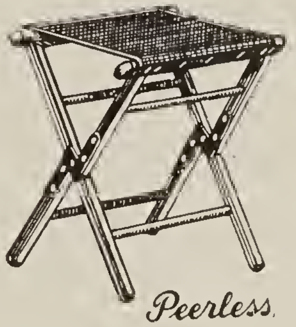
Our double deck bunk is very popular where the sleeping space is limited. These bunks are made of strong angle iron, thoroughly reinforced and have very comfortable length springs.

The most popular size is 2′ 6″ wide, 6′ 3″ long with the top deck 4′ 6″ from the floor, which allows plenty of space on the lower deck.

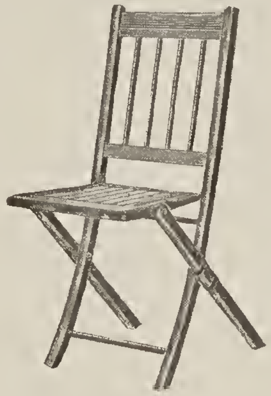
Prices on Request.



No. 32



No. 5



No. 82

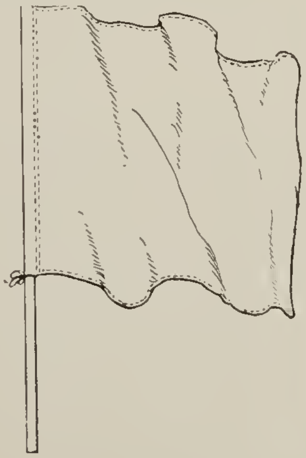
The chair illustrated on the right hand side is an all wood folding chair which is most suitable for general use about camps. It is well made and will stand a tremendous lot of hard usage.

The chair illustrated in the center is a canvas folding chair which can be furnished either with or without the back. This is the most portable chair made and is very convenient for transporting from place to place. It is made just like the folding cots described above.

The chair illustrated on the left hand side is without doubt the most comfortable canvas chair made and is used extensively for porch chairs at summer homes and at the sea shores. It is made of very heavy wooden frame, varnished and with heavy canvas back and seat.

Write us for our latest market price.

Flag	Each 20c
Pole	Each 8c
100 flags at one time.	
Flag	16c
Pole	6c

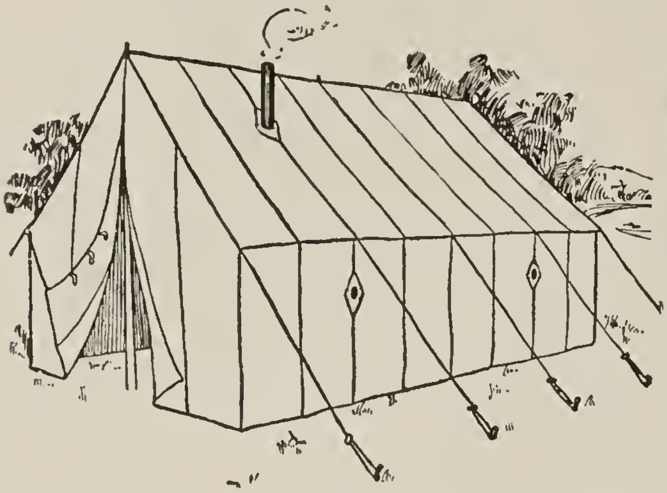


DANGER FLAGS

Our danger flags are made of a fine quality fast color red muslin. The size is approximately 18″ square with a pocket on one side for installing on the wooden handle. These flags are equipped also with a round pole for a handle three feet long.

These flags can be used in a multitude of ways and are a necessity around any construction work.

ROPED WALL TENTS



These tents are roped on the ridge, eaves, gables and over the top at every upright pole. This makes them thoroughly storm proof as the high quality manila rope used takes up the strain.

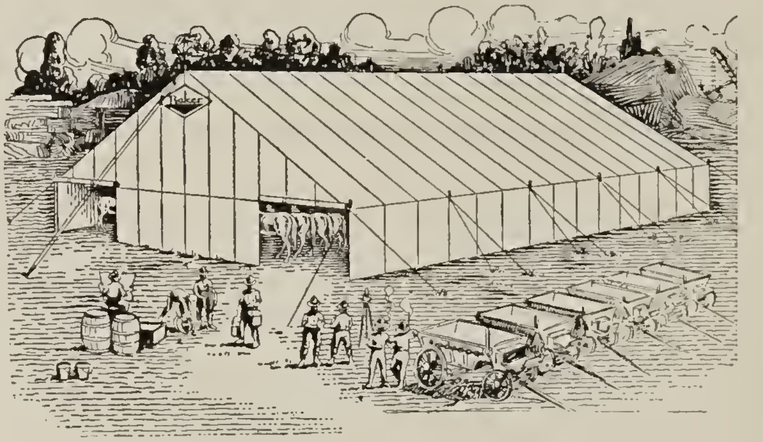
These tents come in the sizes listed below and are equipped with all the necessary poles and stakes.

We can furnish these tents in 10-oz. and 12-oz. and 15 oz. 36″ white duck and also 12-oz. and 15-oz. double filled white duck. This last mentioned material is government standard for their tents.

Each $12.00

Size Size	Wall Feet	Center Pole Feet
12x14	4 and 5	8½ and 9½
14x14	4 and 5	9 and 10
14x16	4 and 5	9 and 10
14x18	4 and 5	9 and 10
14x21	4 and 5	9 and 10
16x16	5	11
16x21	5	11
16x24	5	11
16x28	5	11
16x35	5	11
21x28	5	12
21x35	5	12
21x42	5	12
21x49	5	12
24x28	6	13
24x35 and larger	6	13

STABLE TENTS

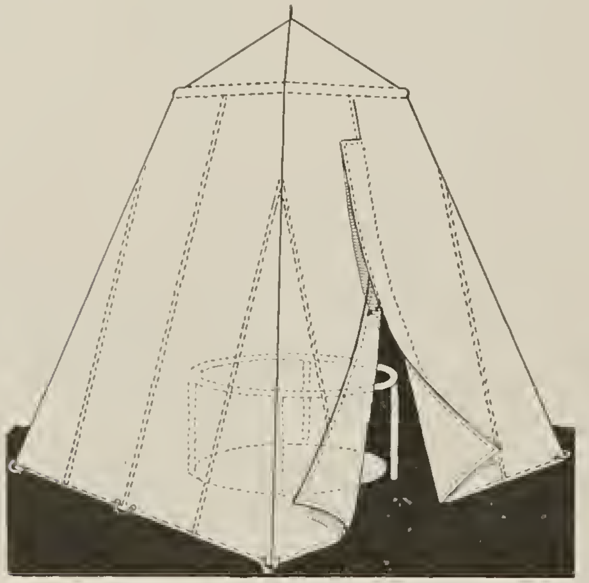


Our stable tents are thoroughly roped throughout and come equipped with natural growth iron banded stakes, poles, block and tackles, double guys at every pole. The walls are made seperate from the tent and can be taken off when the weather is nice, if desired. These walls are 5′ high on all tents.

These tents can be supplied in 10-oz., 12-oz. or 15-oz. 36″ white duck or 12-oz. or 15-oz. double filled white duck. The walls are usually made of slightly lighter material than the top.

We can supply these tents in the following sizes:

Size	Size	Size	Size
24x21	26x35	28x35	30x35
24x28	26x42	28x42	30x42
24x35	26x49	28x49	30x49
24x42	26x56	28x56	30x56
24x49	26x63	28x63	30x63
24x56	26x70	28x70	30x70
24x63	26x77	28x77	30x77
24x70	26x84	28x84	30x84
26x21	28x21	30x21	
26x28	28x28	30x28	

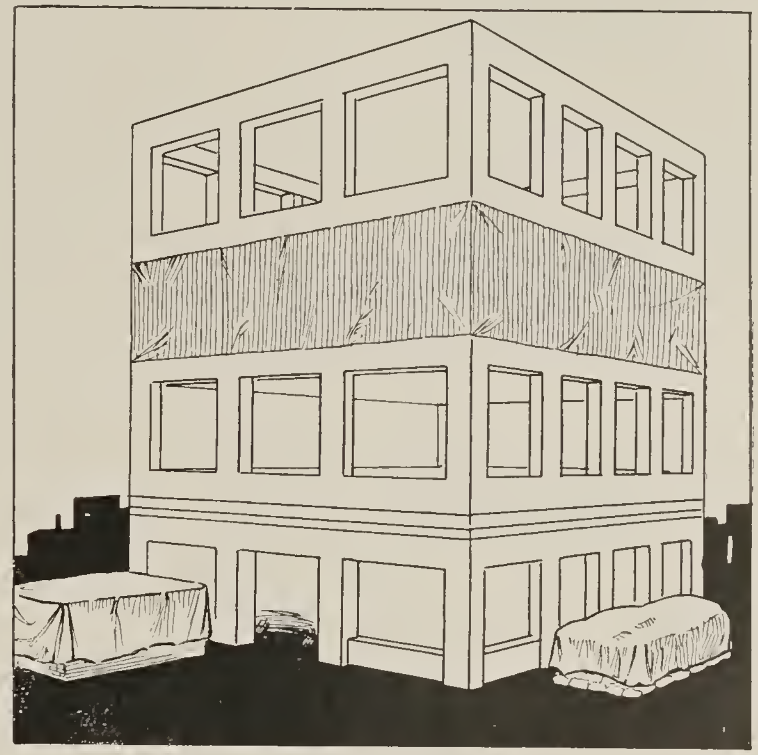


SPLICERS' OR MAN HOLE TENTS

These tents are invaluable for telephone or electric light workmen for protection against the weather.

These tents are 9′ square at the base and 30″ square at the eave and have an over all hight of 7′ 6″. They are made of best quality 36″ 12-oz. double filled white duck. They come with the frame sewed in at the eaves and with all of the necessary ties, strings and loops but without stakes or poles.

TARPAULINS
for
Cement and Material Covers, Building Enclosures, and Wind Breaks.



Victor Brand Water-proof paulins are made of the finest quality double twisted and filled duck. They are then treated with a fine quality of waterproofing compound which makes them obsolutely waterproof. We offer these to you as the finest quality that can be obtained and will stand unusually hard wear for a long period of time, which makes them actually a more economical paulin than some of the socalled cheap paulins which are on the market.

You can see from the sketch at the side some of the uses to which these paulins can be used.

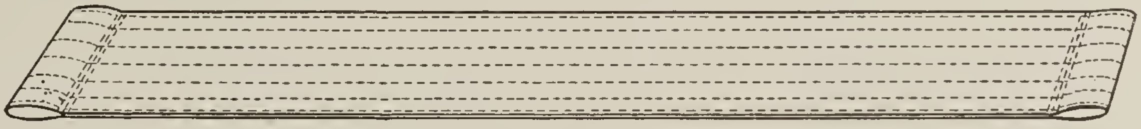
These paulins are mildew proof.

The Victor General Utility Covers are made of the same high grade material as the above but are not waterproofed.

All of these covers are well made with double sewed seams and wide hems with reinforcements at the corners and equipped with brass eyelets around the edges as desired.

Although we recommend the best grade of material for your use and carry it in stock for immediate shipment, we are able to supply your needs for any quality of canvas that you might desire. If you cannot use these best grades, write to us for quotations on whatever you need, as we can promptly supply anything in the canvas line.

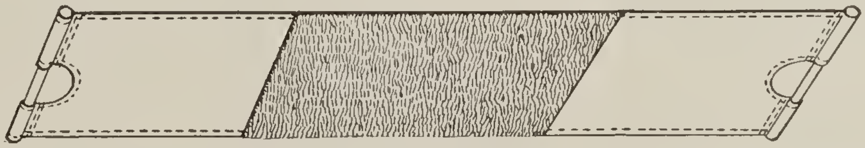
VICTOR SPECIAL FINISHING BELTS



6″, 8″ or 10″ wide. Per ft. **17c**

These belts are made of 10-oz. 29″ material, folded to make them three-ply finishing about 10″ wide. They are thoroughly stitched to make them stiff and durable as required in paving work. They are made with a 6″ loop at both ends for installing a handle. These can be supplied in any length but the standard sizes are 18′, 20′, 22′ and 24′.

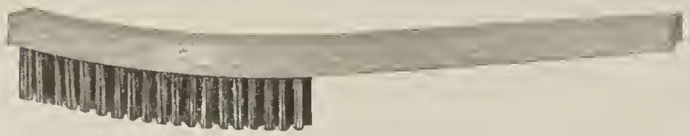
PIPE PAINTERS



Our pipe painters are a very convenient and effective article for painting of the gas and oil pipe lines on the under side. They are made of heavy canvas with a handle on both ends and with a large piece of heavy carpet in the middle. This carpet acts as a brush and thoroughly spreads the paint on the pipe as it is pulled back and forth across the surface. The paint is poured on to this carpet which acts as both a brush and sponge for holding the paint while it is being used.

HAND WIRE SCRATCH BRUSHES

Long Handle

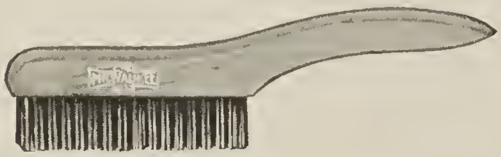


No. 1651—3x19 rows, length of wire 1⅛ inches. Is very effective for Braizers' and Pattern Makers' finishing work. Extensively used by Auto Repair and vulcanizing shops for general work.

	Per doz.
Weight	6 lbs.
List	$3.75

Packed One Dozen in carton.

SHOE HANDLE



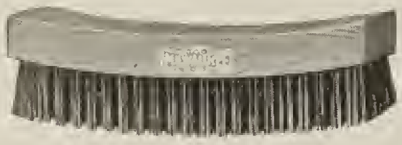
No. 1641—4 rows, length of wire 1⅛ inches.

No. 1641 is a companion brush to No. 1632 for use in places inaccessible to the lated. Especially effective for brushing pipe threads and battery terminals.

	Per doz.
Weight	5 lbs.
List	$4.50

Packed One Dozen in carton.

CURVED BACK



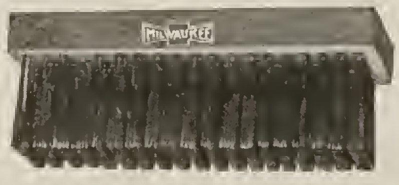
No. 1632—9x21 rows, length of wire 1⅛ inches.

Heavily filled, wide face, evenly trimmed. Very effecitve for removing varnish and paint from surfaces to be refinished.

	Per doz.
Weight	10 lbs.
List	$7.50

Packed One Dozen in carton.

STRAIGHT BACK

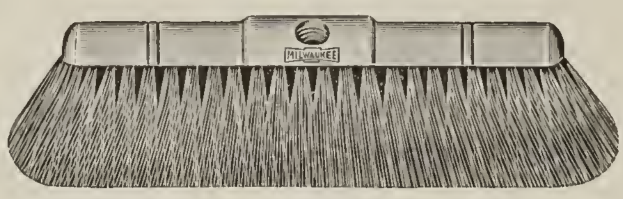


No. 1611—6x19 rows, length of wire 1¾ inches. For general purposes in removing paint, rust, grease, etc. Takes the place of sandpaper, steel wool and similar abrasives.

	Per doz.
Weight	9 lbs.
List	$4.80

Packed One Dozen in carton.

FLOOR BRUSHES

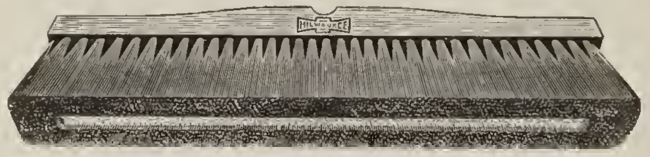


Alice

Select black fibre center, black horsehair casing. Wire fastened. Length of stock 2¾ inches. Polished red block. Polished red handle.

An excellent brush for general purposes, cement, wood floors, etc.

Size	16″
Weight, per doz.	33 lbs.
List, per doz.	$28.00

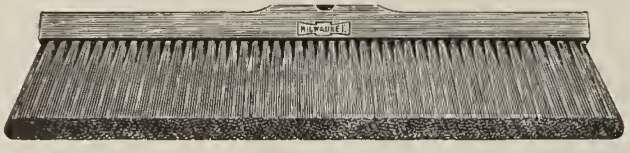


Hummer

Center row of fine round carbon steel wire. Selected black fibre in balance of brush. Wire fastened. Length of stock 2⅝ inches in center row, 2⅞ inches in outer rows. Natural varnished block. Natural polished handle.

The wire center in this brush is very effective on rough wood or cement floors in factories, warehouses and garages.

Size	18″
Weight, per doz.	36 lbs.
List, per doz.	$38.00



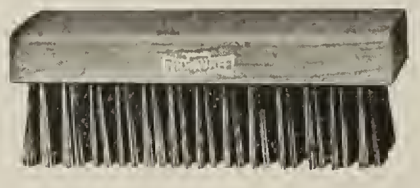
Joe

Good quality genuine bassine fibre. Wire fastened. Length of stock 4 inches. Natural varnished block. Heavily filled. Plain handle, not threaded.

Leads all others in durability and effectiveness for rough cement and coarse wood floor sweeping.

Sizes	18″	24″
Weight, per doz.	52 lbs.	63 lbs.
List, per doz.	$38.00	54.00

HEAVY DUTY WIRE SCRUB BRUSH



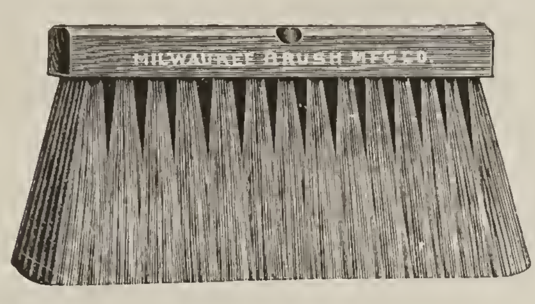
No. 1623—Heavily filled round wire scrub. 5x13 rows, length of wire 1⅝ inches. Made especially for hard usage in cleaning Stone, Terra Cotta or Brick surfaces. Very effective where quick cutting is necessary.

	Per doz.
Weight	15 lbs.
List	$9.50

Packed One Dozen in carton.

Note: All floor brushes above packed individually. Weights and lists include handles.

GENUINE AFRICAN BASS PUSH BROOMS


MILWAUKEE BRUSH MFG CO.

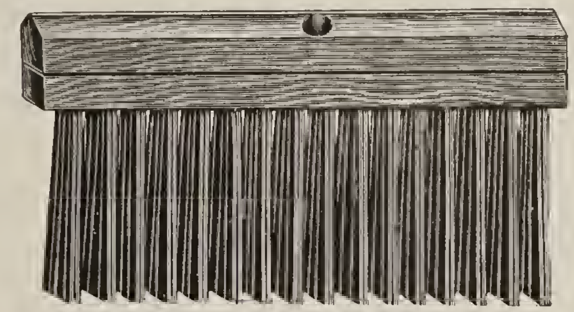
Solid block, 6 inch trim, 5 rows.

Size	14″	16″
Weight, per doz.	37 lbs.	43 lbs.
List, per doz. shipped in bulk	$21.00	21.00

Note: Handles not included in above lists.

No. 350—4½ ft. long, 1⅛ inch diameter handles for push brooms, List, per doz. $2.70

FLAT TEMPERED WIRE PUSH BROOMS

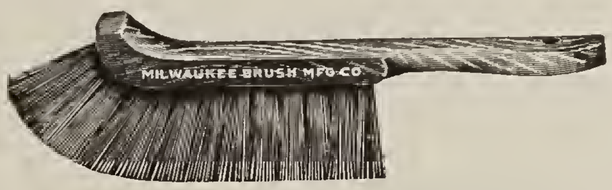


Selected hardwood blocks; five inch stock

No.	Size of block	Rows	Weight	List per doz.
1001	12x2⅜	4	28 lbs.	**$18.00**
1006	14x2½	5	35 lbs.	**33.00**
1007	16x2½	5	40 lbs.	**38.00**

Shipped in bulk. Handles not included. See note above.

BENCH OR COUNTER BRUSH


MILWAUKEE BRUSH MFG CO.

Chief

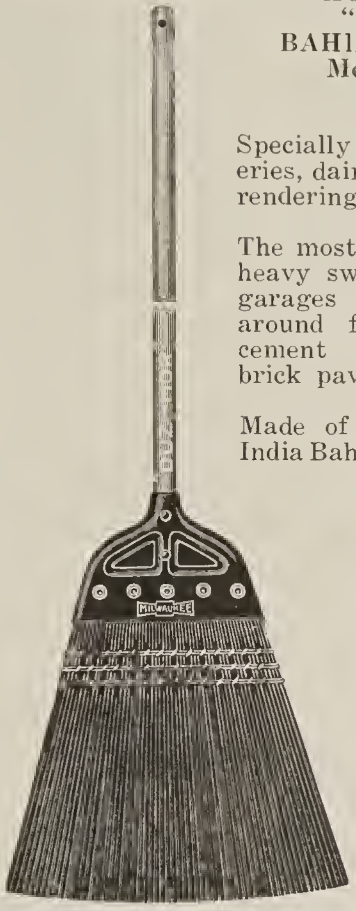
Selected grey fibre, ten inch brush part. Plain finished block. Length of stock 2½ inches.

A favorite brush for general use in factories, machine shops, etc.

Weight, per doz.	7 lbs.
List, per doz.	$9.00

Packed One Dozen in carton.

FACTORY AND WAREHOUSE BROOM "DUZ-MOR" BAHIA BASS FIBRE Metal Shielded BROOMS



Specially designed for creameries, dairies, packing-houses, rendering plants, etc.

The most durable brooms for heavy sweeping in factories, garages and freight cars; around filling stations; on cement floors, side-walks, brick pavements, etc.

Made of hand picked, oiled India Bahia Bass set in waterproof rubber cement and securely held in a finished metal shield that is bound thru and thru by steel rivets and fastened by heavy brass eyelets.

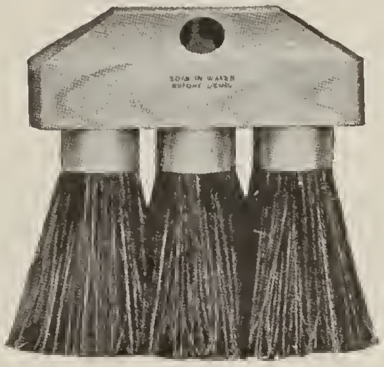
Reinforced with Three heavy twine sewings that increase the flexibility of the fibres, prevent them from spreading and keep the broom in shape.

Weight, per doz.	32 lbs.
List, per doz.	$28.50

Packed One dozen in strong fibre shipping carton.

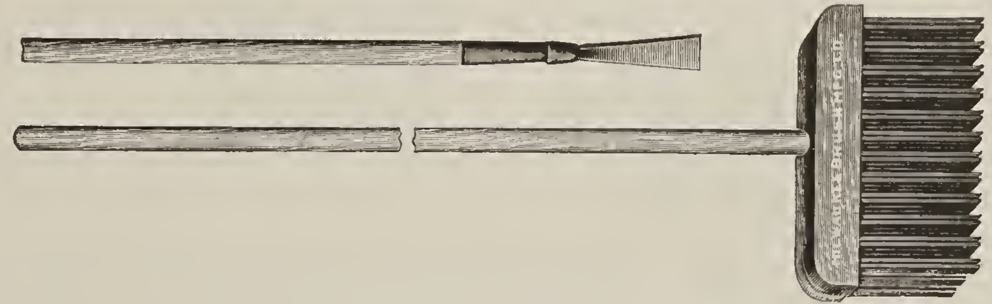
PIPE CLEANING BRUSH

Our knotted rooting brush, made like oval paint brushes. Fastened securely to a heavy block. For use in roofing paint. Also for cleaning pipe.



Tarzon

FLAT WIRE TRACK OR SWITCH BROOMS


MILWAUKEE BRUSH MFG CO.

Made of Flat Tempered Steel Wire
Block 11x1⅝″, 3 rows, Length of wire 4½″

No.	Weight Per doz.	List Per doz.
1260—Equipped with 48″ handle, without chisels	30 lbs.	$19.50
1261—Equipped with 51″ handle, with chisels	33 lbs	24.00

Shipped in bulk.

SKELTON HEAT TREATED SHOVELS, SPADES AND SCOOPS

The Skelton Shovel is the original "Heat Treated Shovel" on the market made from one solid bar of steel. No rivets or welds are used in the formation of the blade, shank or socket.

To "Heat Treat" the blade in Skelton Shovels the steel must be hardened so that it will have the same hardness required in a high-grade file. After this hardness is attained, the temper must be treated to give the steel a bending resistance without removing the hardness, thus giving the blade the maximum of both hardness and toughness.

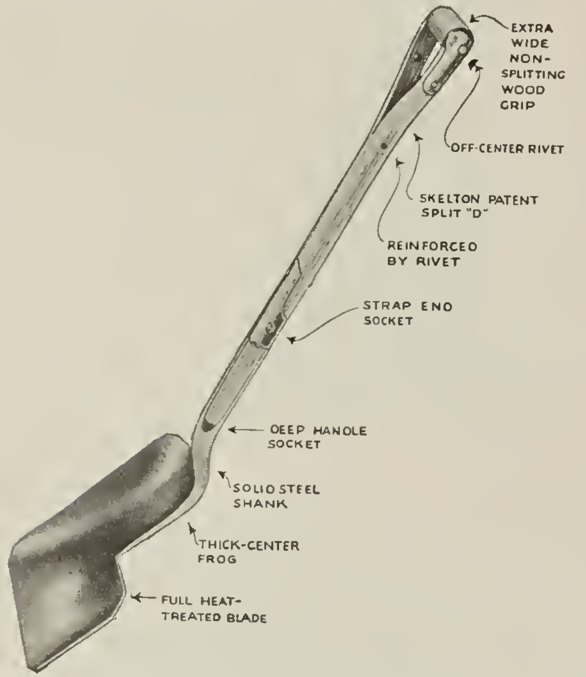
The blade being "Heat Treated" prevents it from splitting under the most severe kind of bending in service. The edge of the blade will not curl up.

All handles on Skelton Shovels are made from straight grain, second growth, Northern Ash. The "D" patterns are all split fork design, with non-breakable hand grip.

All Skelton Shovels are of the same high quality but are furnished in two different weights. Bantam Brand—Feather Weight. Bull dog Brand—Heavy Weight.

The Bantam Brand is most commonly used on account of its light weight and the Bull Dog Brand is used for heavy contracting and railroad work.

Four steps in the construction of Skelton Flexteel Quality one-piece solid shank socket shovels.

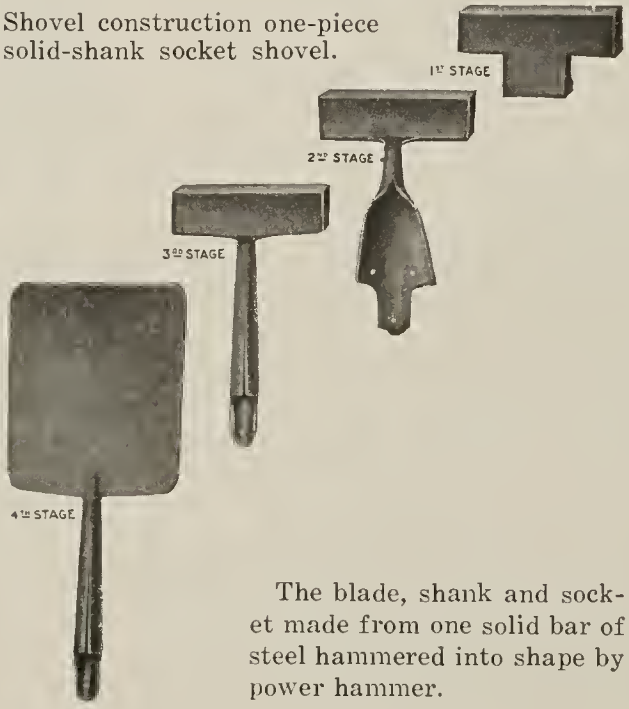

EXTRA WIDE NON-SPLITTING WOOD GRIP
OFF-CENTER RIVET
SKELTON PATENT SPLIT "D"
REINFORCED BY RIVET
STRAP END SOCKET
DEEP HANDLE SOCKET
SOLID STEEL SHANK
THICK-CENTER FROG
FULL HEAT-TREATED BLADE

These four stages are shaped under the power hammer process.

A one-piece shovel free from all pieced-together joints.

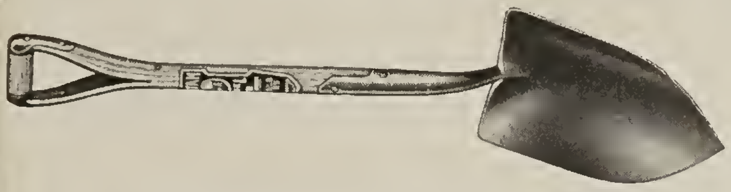
Photographic reproduction of actual tests in the jaws of a vise made with Skelton Flexteel Quality hollow back shovels and scoops.

Shovel construction one-piece solid-shank socket shovel.


1st STAGE
2nd STAGE
3rd STAGE
4th STAGE

The blade, shank and socket made from one solid bar of steel hammered into shape by power hammer.

BANTAM BRAND—FEATHER WEIGHT SHOVELS, SPADES AND SCOOPS

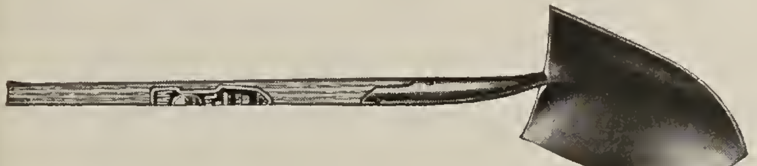


SKELTON ROUND POINT SHOVEL

Split "D" Handle

Size of blade 8¾x12½ ins. Weight, per doz. 48 lbs. Black finish.
No. 2 size .... Per. doz.

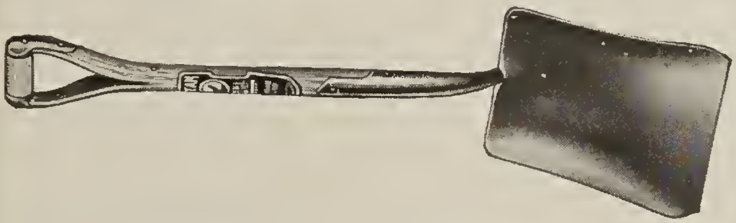
Size of blade 9x13 inches. Weight per doz. 50 lbs. Black finish.
No. 3 size .... Per doz.



SKELTON ROUND POINT SHOVEL

Long Handle

Size of blade 8⅞x11½ inches. Weight per doz. 48 lbs. Black finish
No. 2 size .... Per doz.



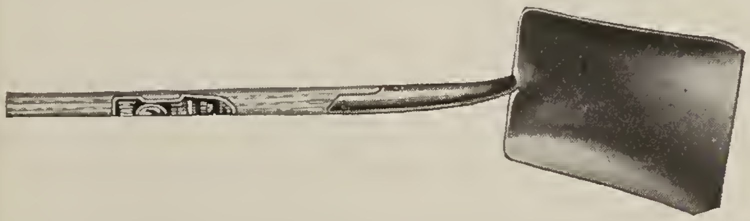
SKELTON SQUARE POINT SHOVEL

Split "D" Handle

Size of blade 9¾x12½ inches. Weight per doz. 50 lbs. Black finish
No. 2 size .... Per doz.

Size of blade 10x12¾ inches. Weight per doz. 52 lbs. Black finish
No. 3 size .... Per doz.

Size of blade 10¼x13 inches. Weight per doz. 55 lbs. Black finish
No. 4 size .... Per doz.

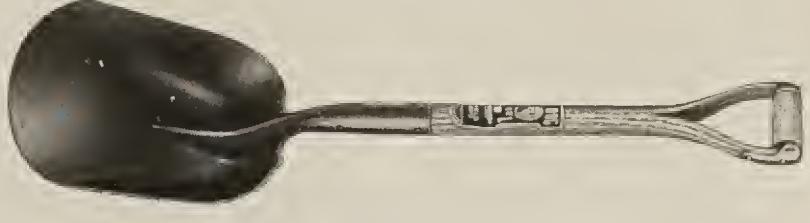


SKELTON SQUARE POINT SHOVEL

Long Handle

Size of blade 9¾x12½ inches. Weight per doz. 51 lbs. Black finish

No. 2 size .... Per doz.

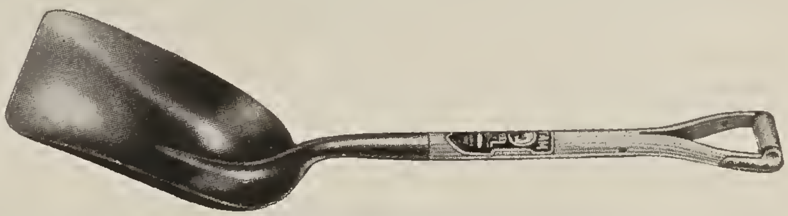


SKELTON ROUND POINT SCOOPS

Split "D" Handle

Size of blade 11¼x15¼ inches. Weight per doz. 60 lbs. Black finish

No. 2 size .... Per doz



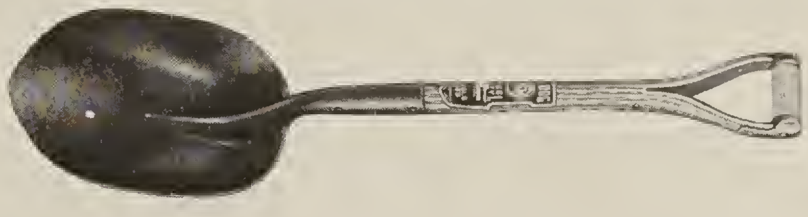
SKELTON SQUARE POINT SCOOP

Split "D" Handle

Size of blade 11½x15 inches. Weight per doz. 60 lbs. Black finish

No. 2 size .... Per doz.

Eastern Pattern



SKELTON BREAKING DOWN ROCK SCOOP

Diamond Point—Split "D" Handle

Size of blade 11x16 inches. Weight per doz. 69 lbs. Black finish.

No. 4 size .... Per doz.

SKELTON BULL DOG EXTRA HEAVY DRAIN SPADE

Split "D" Handle and Steps

Size of blade 16 ins. long 4½ ins. wide at bottom; 5½ ins. wide at top.
16-inch .... Per doz.

SKELTON BULL DOG EXTRA HEAVY DITCH SPADE

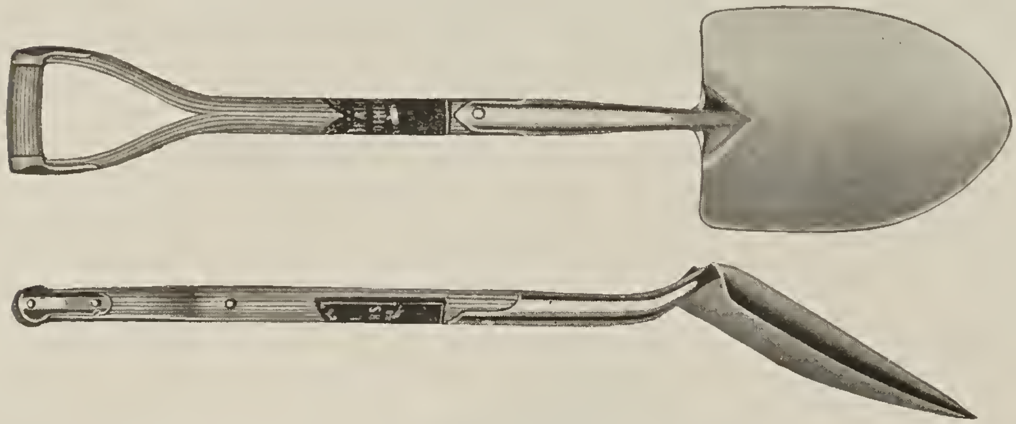
Split "D" Handle and Steps

Size of blade 16 inches long; 6 inches wide at bottom; 5½ inches wide at top.
16-inch .... Per Doz.

FOR PRICES ON ABOVE SHOVELS SEE OUR LATEST DISCOUNT BOOK

PLAIN BLACK SPLIT "D" HANDLE AND LONG HANDLE SHOVELS, SPADES AND SCOOPS

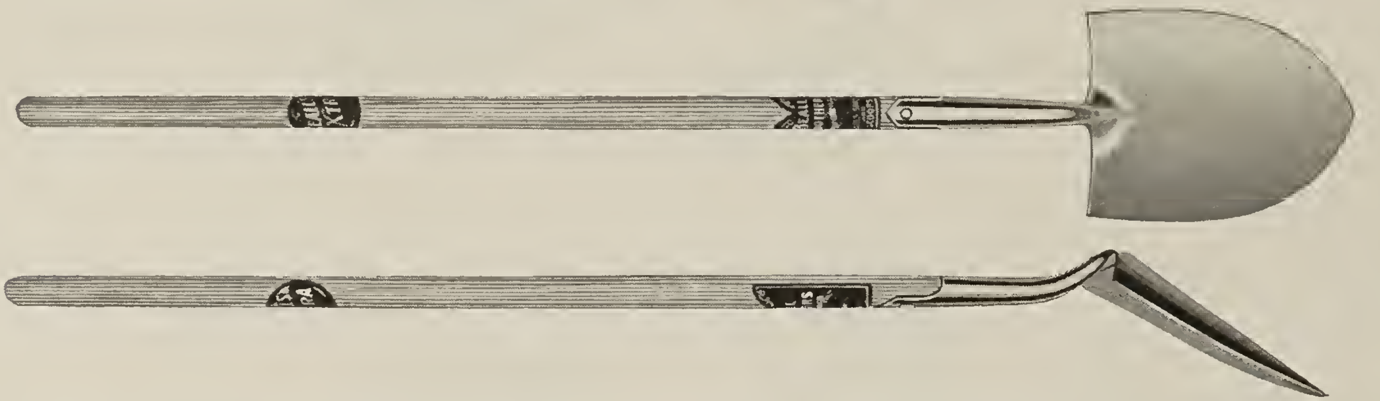
Victor Brands are good serviceable tools, made of high carbon open hearth steel. Handles are No. 1 grade Northern Ash.



VICTOR BRAND ROUND POINT SPLIT "D" HANDLE SHOVELS

Size of blade 8½x11¾ inches. Wt. per doz. 55 lbs.

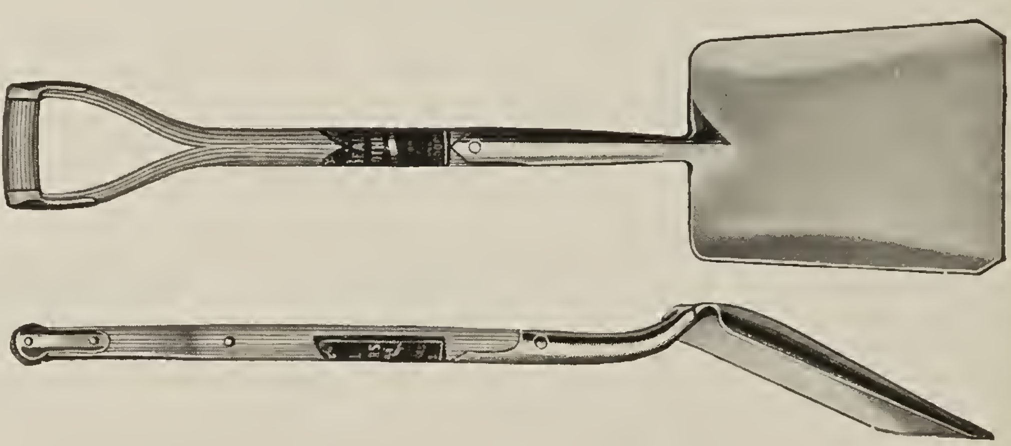
No. 2 size. Per doz. $28.00



VICTOR BRAND ROUND POINT LONG HANDLE SHOVELS

Size of blade 9¼x11⅞ inches. Weight per doz. 58 lbs.

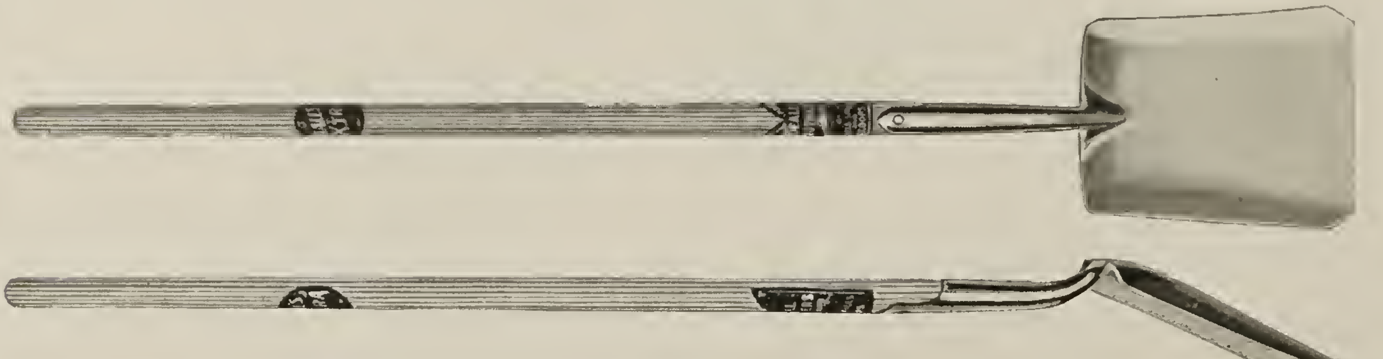
No. 2 size. Per doz. $28.00



VICTOR BRAND SQUARE POINT SPLIT "D" HANDLE SHOVEL

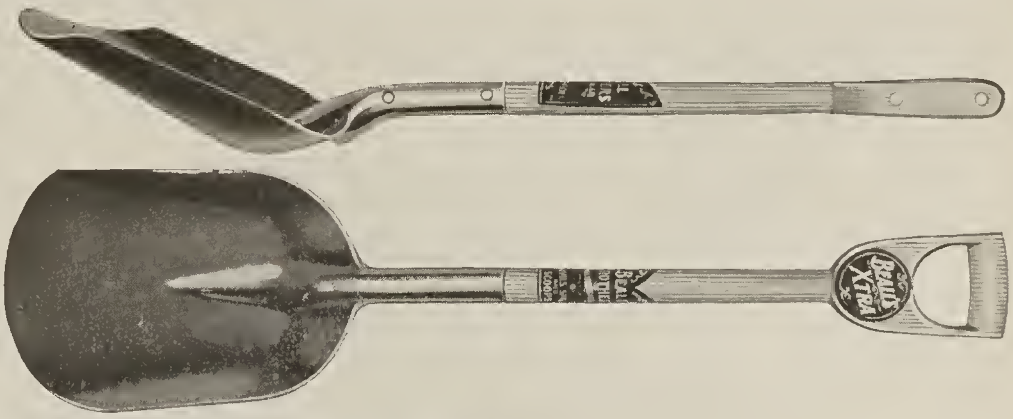
Size of blade 9⅜x11⅝ inches. Wt. per doz. 56 lbs.

No. 2 size. Per doz. $28.00



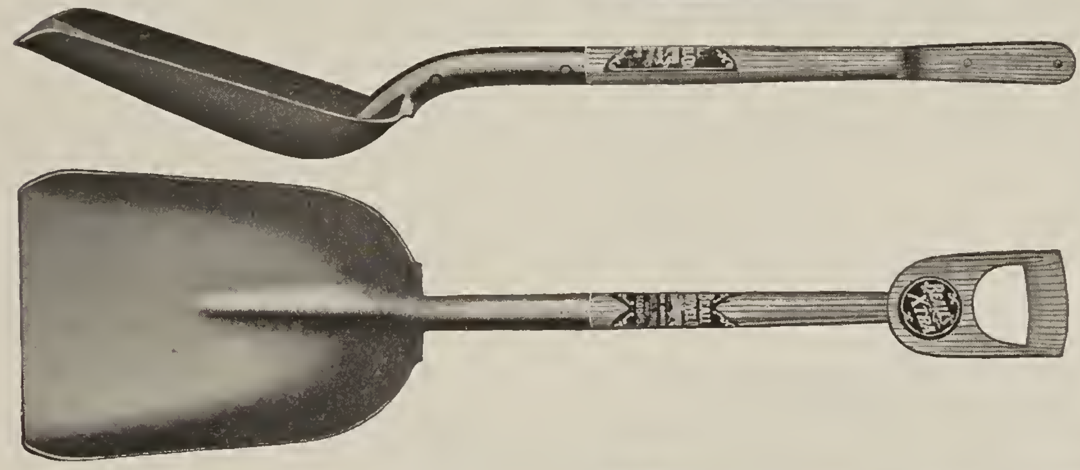
VICTOR BRAND SQUARE POINT LONG HANDLE SHOVEL

Size of blade 9⅜x11⅝ inches. Weight per doz. 60 lbs. No. 2 size. Per doz. $28.00



VICTOR BRAND ROUND POINT SPLIT "D" HANDLE EASTERN PATTERN SCOOP

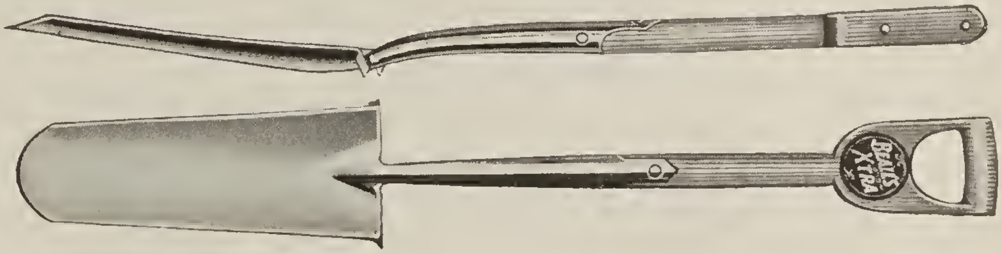
Size of blade, 10⅞x15 inches. Wt. per doz. 70 lbs.
No. 2 size. Per doz. $28.00



VICTOR BRAND SQUARE POINT SPLIT "D" HANDLE EASTERN PATTERN SCOOP

Size of blade 10⅞x15 inches. Wt. per doz. 70 lbs.

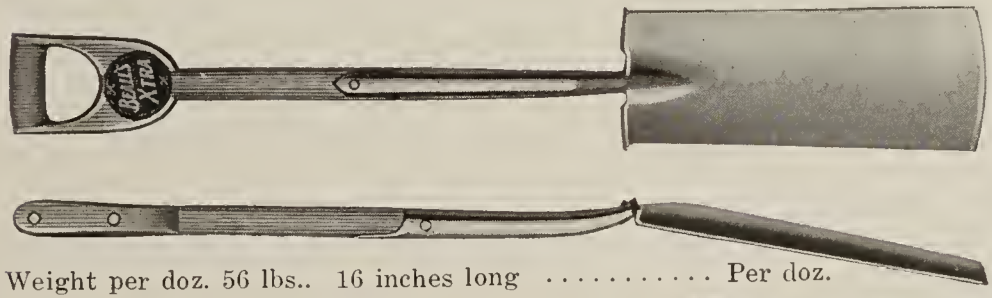
No. 2 size. Per doz $28.00



VICTOR BRAND ROUND POINT SPLIT "D" HANDLE DRAIN SPADE

Size of blade 16 inches long; 5½ inches wide. Weight per doz. 52 lbs.

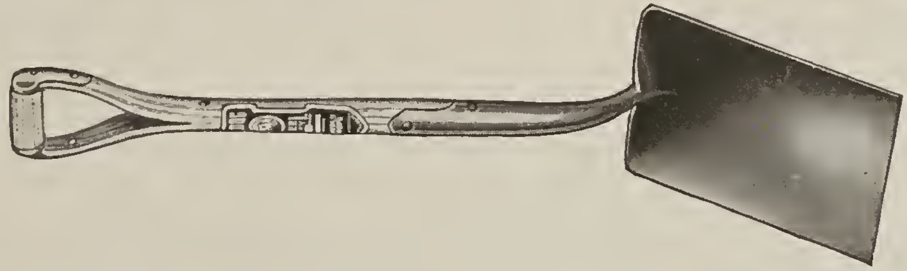
16 inches long............ Per doz.



VICTOR BRAND SQUARE POINT SPLIT "D" HANDLE DITCHING SPADE

Size of blade 16 inches long; 6¼ inches wide.

Weight per doz. 56 lbs.. 16 inches long .... Per doz.



ASPHALT TOOLS

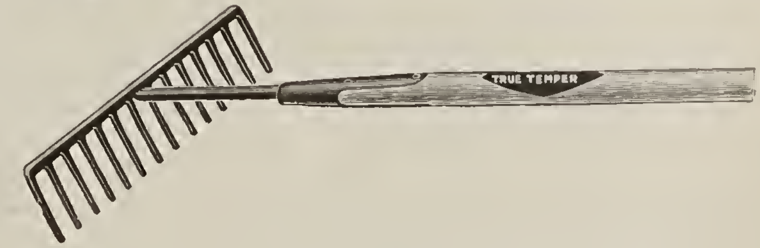
Our Asphalt Shovels are made of high grade steel. One-piece solid shank socket pattern, designed especially for hot asphalt with split "D" handle. Size of blade 10x12 inches. Weight, per doz. 60 lbs.

No. 2 size .... Per doz.

All Steel Asphalt Fork designed especially to handle hot asphalt.

The shank is driven into an all steel tubular handle and securely fastened by a malleable iron wedge and the whole riveted together. Ten square tines 13½" long, with ¾" space between tines.

No. AF10—Per Doz. $55.00

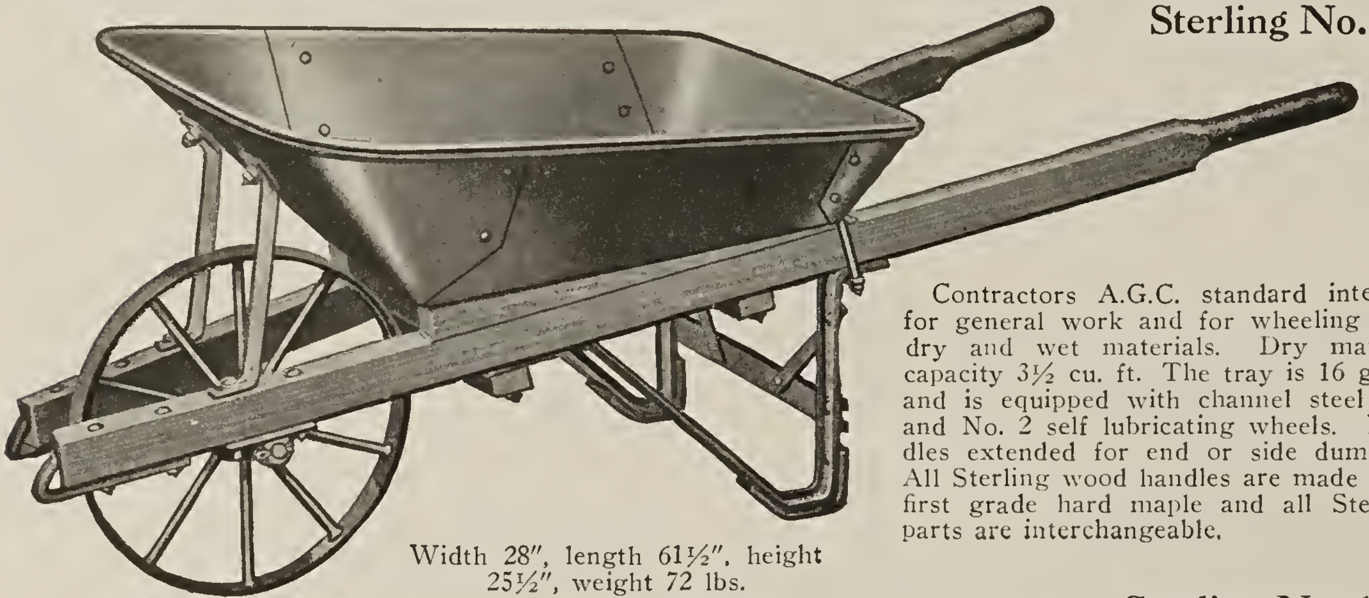


STEEL ASPHALT RAKE

With long shank. Strap ferrules. 14 teeth with 5 foot handle.
No. 914—Per doz. $45.00

WHEELBARROWS AND CONCRETE CARTS

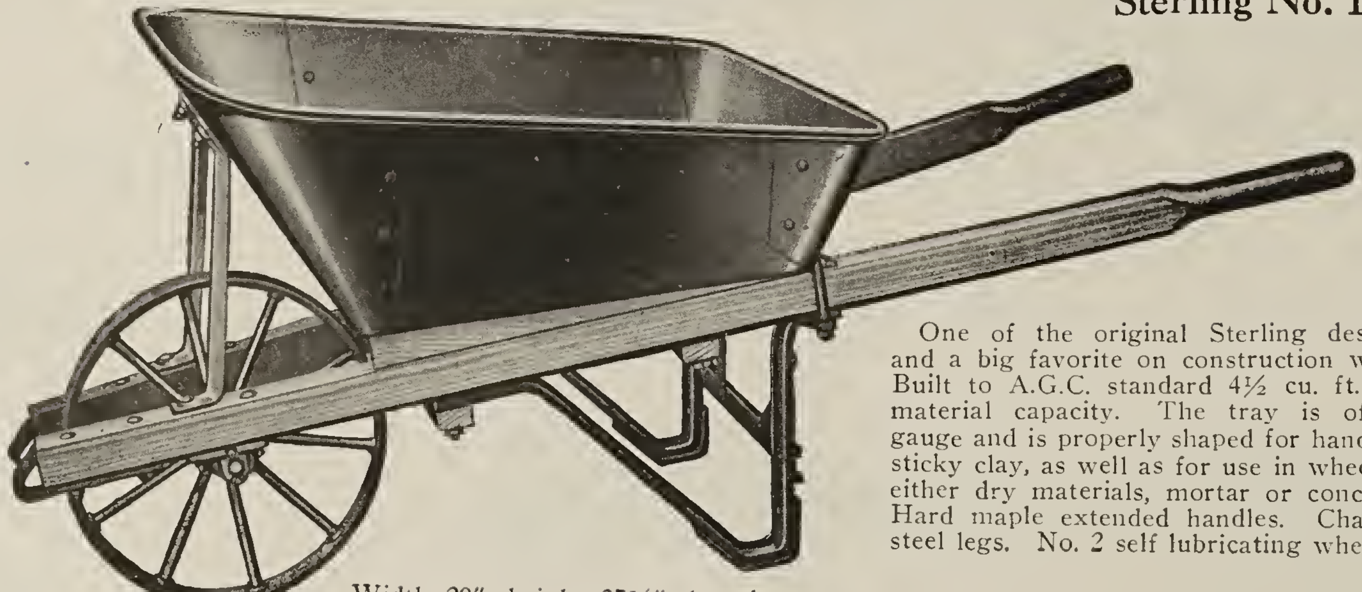
Sterling No. 6A



Width 28", length 61½", height 25½", weight 72 lbs.

Contractors A.G.C. standard intended for general work and for wheeling both dry and wet materials. Dry material capacity 3½ cu. ft. The tray is 16 gauge and is equipped with channel steel legs and No. 2 self lubricating wheels. Handles extended for end or side dumping. All Sterling wood handles are made from first grade hard maple and all Sterling parts are interchangeable.

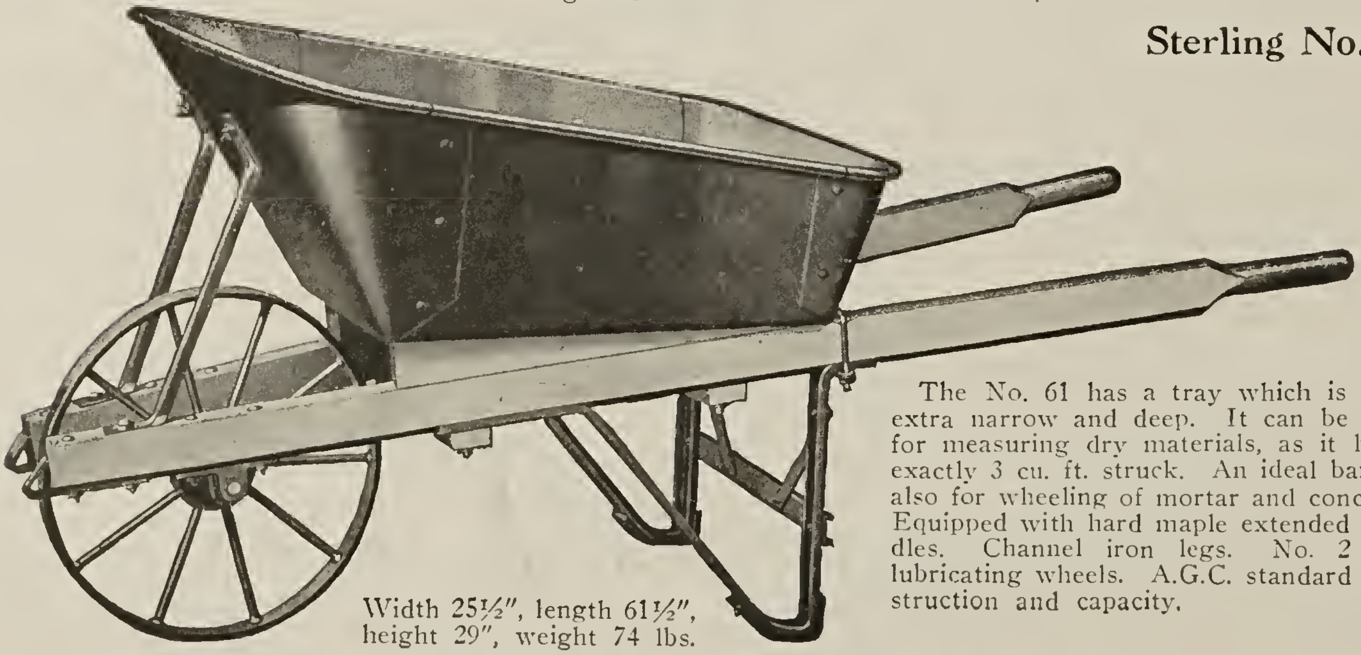
Sterling No. 10A



Width 29", height 27½", length 61½", weight 76 lbs.

One of the original Sterling designs and a big favorite on construction work. Built to A.G.C. standard 4½ cu. ft. dry material capacity. The tray is of 16 gauge and is properly shaped for handling sticky clay, as well as for use in wheeling either dry materials, mortar or concrete. Hard maple extended handles. Channel steel legs. No. 2 self lubricating wheel.

Sterling No. 61



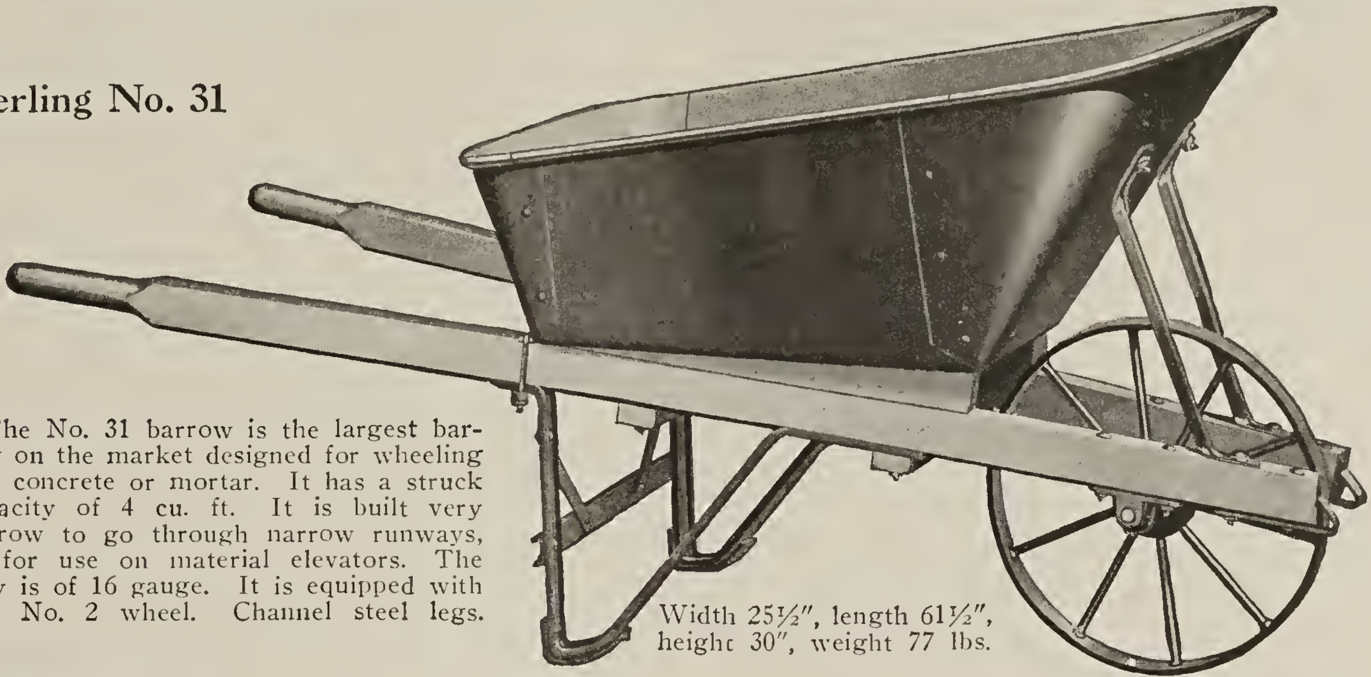
Width 25½", length 61½", height 29", weight 74 lbs.

The No. 61 has a tray which is built extra narrow and deep. It can be used for measuring dry materials, as it holds exactly 3 cu. ft. struck. An ideal barrow also for wheeling of mortar and concrete. Equipped with hard maple extended handles. Channel iron legs. No. 2 self lubricating wheels. A.G.C. standard construction and capacity.

Parts are interchangeable on all Sterling barrows

WHEELBARROWS AND CONCRETE CARTS

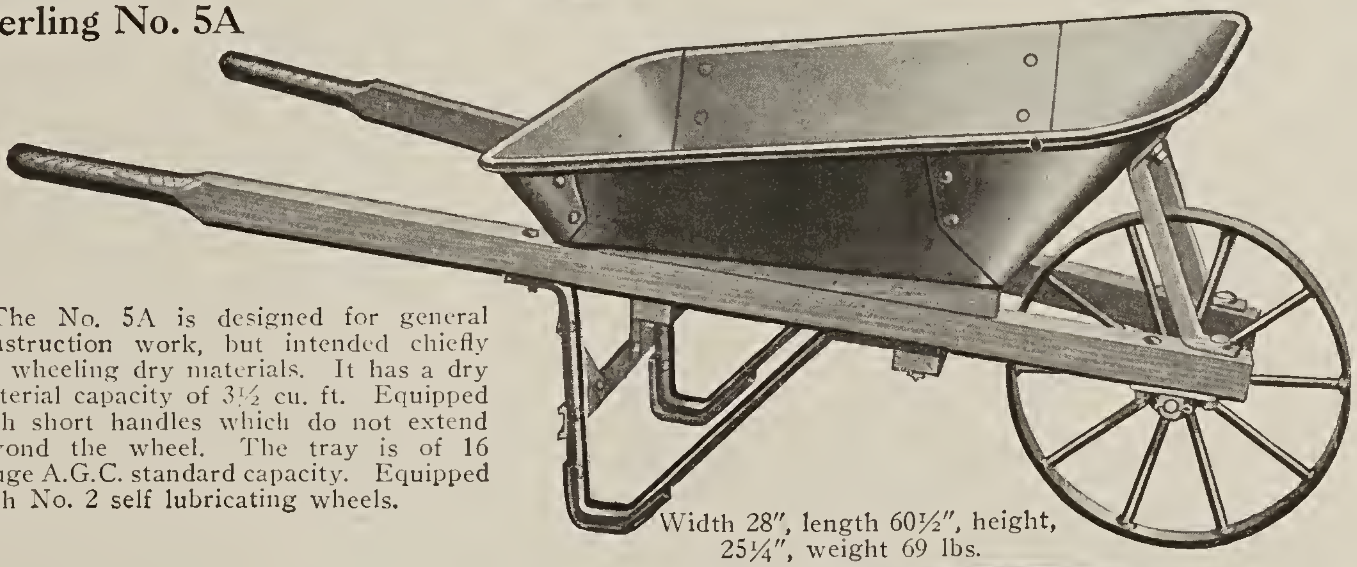
Sterling No. 31



The No. 31 barrow is the largest barrow on the market designed for wheeling wet concrete or mortar. It has a struck capacity of 4 cu. ft. It is built very narrow to go through narrow runways, or for use on material elevators. The tray is of 16 gauge. It is equipped with our No. 2 wheel. Channel steel legs.

Width 25½″, length 61½″, height 30″, weight 77 lbs.

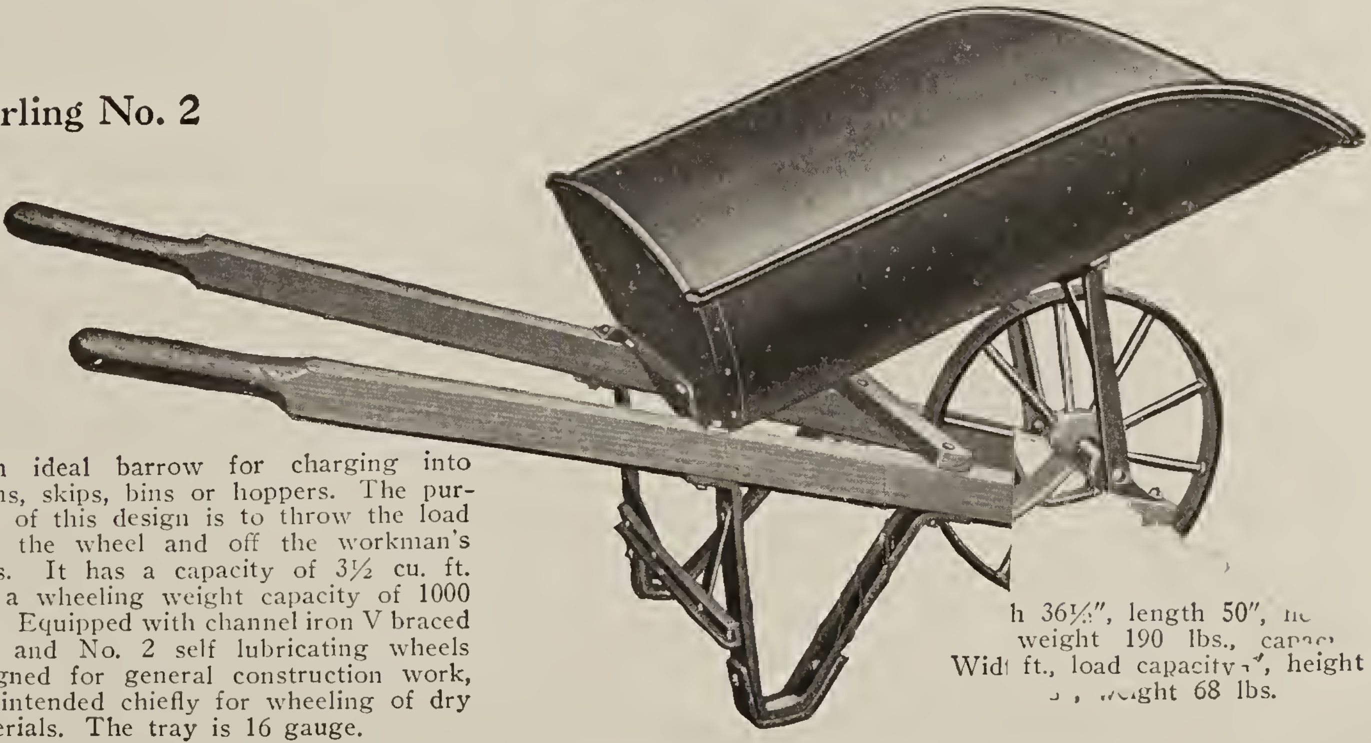
Sterling No. 5A



The No. 5A is designed for general construction work, but intended chiefly for wheeling dry materials. It has a dry material capacity of 3½ cu. ft. Equipped with short handles which do not extend beyond the wheel. The tray is of 16 gauge A.G.C. standard capacity. Equipped with No. 2 self lubricating wheels.

Width 28″, length 60½″, height, 25¼″, weight 69 lbs.

Sterling No. 2



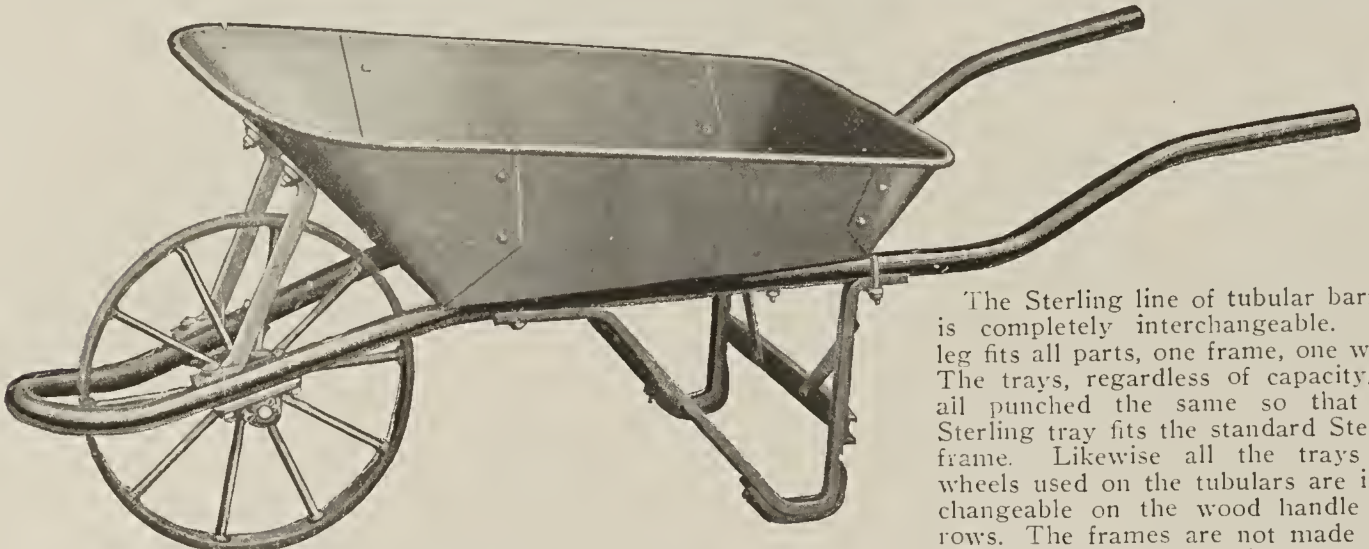
An ideal barrow for charging into forms, skips, bins or hoppers. The purpose of this design is to throw the load over the wheel and off the workman's arms. It has a capacity of 3½ cu. ft. and a wheeling weight capacity of 1000 lbs. Equipped with channel iron V braced legs and No. 2 self lubricating wheels designed for general construction work, but intended chiefly for wheeling of dry materials. The tray is 16 gauge.

h 36½″, length 50″, he
weight 190 lbs., capac
Widt ft., load capacity [illegible], height
[illegible], weight 68 lbs.

Parts are interchangeable on all Sterling barrows

WHEELBARROWS AND CONCRETE CARTS

Sterling Tubulars



No.	Gauge	Width	Length	Height	Weight	Purpose
7X	18	26½	60¼	22½	54	General
7A	18	26½	64	23¾	66	General
7	16-14-12	28	64	24	73	Construction
7B	16-14-12	30	64	25	76	Construction
9	16	29	64	26	75	Concrete
43	16-14-12	26	64	24	70½	Concrete
63	16	25	64	28	74	Concrete
33	16	25	64	29½	77	Concrete
35	16	34½	64	28	82	Coal
11	14	32	64	30	100	Coal
25	14	37	65	33¼	120	Coke

The Sterling line of tubular barrows is completely interchangeable. One leg fits all parts, one frame, one wheel. The trays, regardless of capacity, are all punched the same so that any Sterling tray fits the standard Sterling frame. Likewise all the trays and wheels used on the tubulars are interchangeable on the wood handle barrows. The frames are not made from light tubing but are made from standard extra heavy pipe. A No. 2 self lubricating wheel is used on all numbers unless otherwise specified. The leg construction is of channel steel, cross braced, "V" braced and riveted. The legs are also equipped with heavy shoes. The Sterling tubulars are built for maximum strength, and like the wood handle barrows are also designed chiefly for all manner of construction work. The entire Sterling line of both tubular and wood handle barrows is built not only for maximum strength, but is designed for ease of operation. Trays are placed well forward on the frames so as to lighten the effort of wheeling.

Sterling No. 4

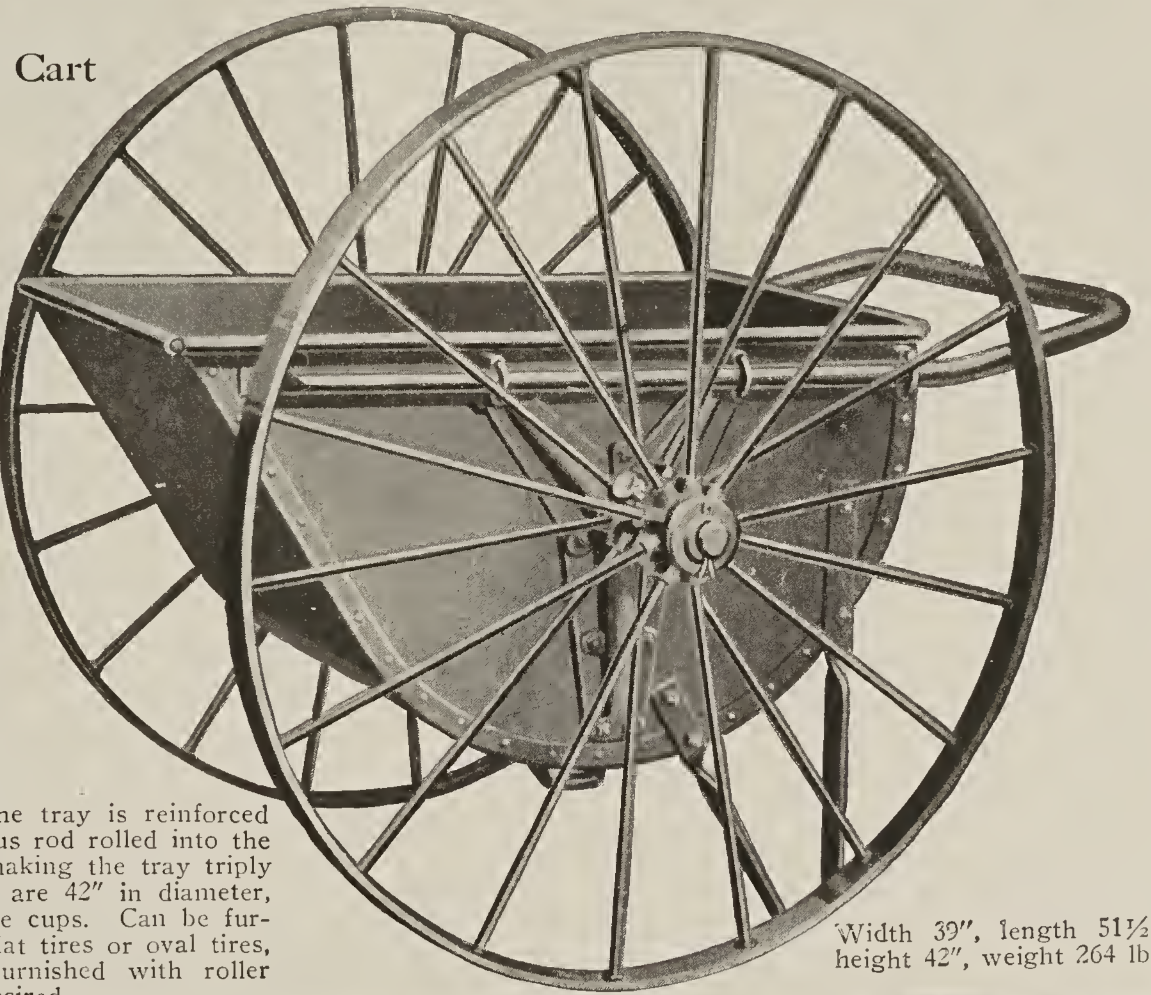
Designed for either dry or wet material, this design represents the easiest wheeling barrow on the market. The load is over the wheel. The barrow is equipped with a self lubricating wheel and heavy continuous tubular frame. Both legs and handles are incorporated in the continuous frame, making a simplified and strong construction. The tray is of 16 gauge reinforced with continuous rod, has a capacity of 3½ cu. ft. dry material. Tray is supported by a flanged plate protecting the back, likewise a heavy flanged plate support for the bottom.

", length 61½"
Wweight 81½ lbs.
he

Parts are interchangeable on all Sterling barrows

WHEELBARROWS AND CONCRETE CARTS

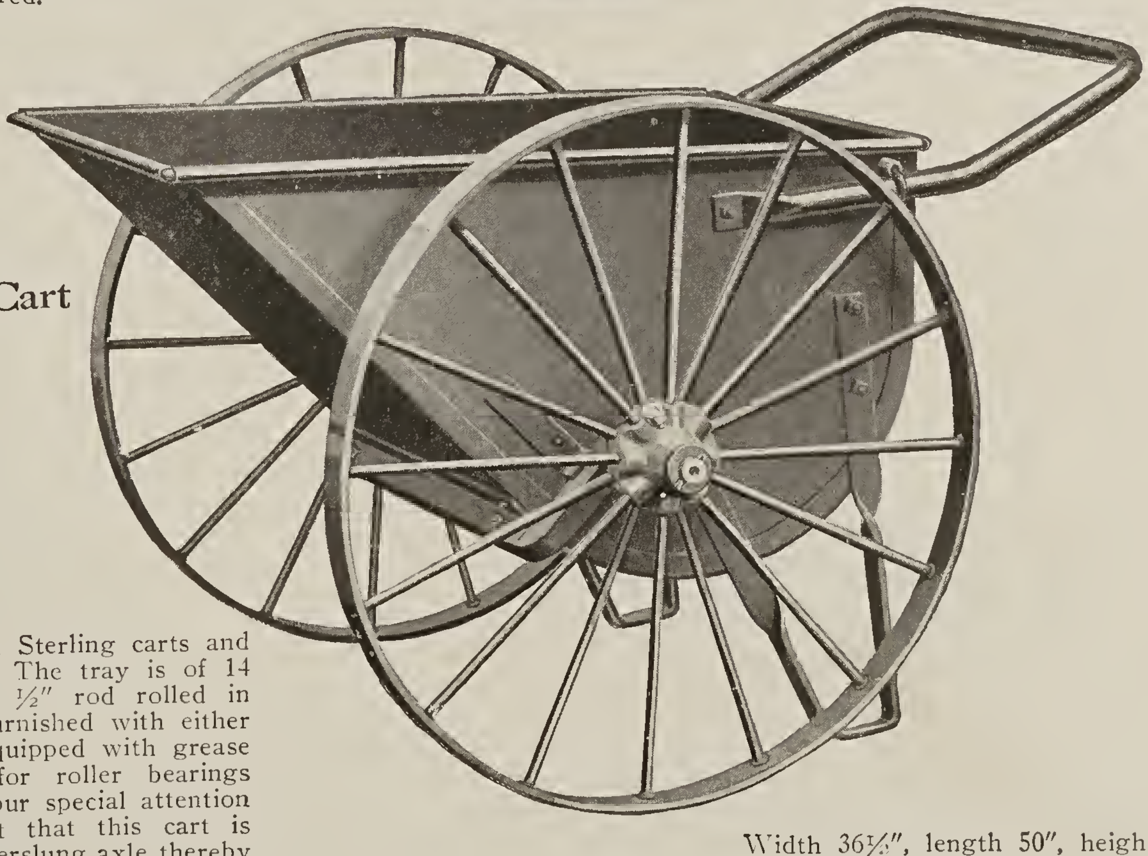
Sterling No. 6 Cart



The No. 6 is the strongest built cart on the market. The tray is 12 gauge throughout. The sides are reinforced by heavy malleable brackets. Your special attention is called to the pipe handle reinforcement which extends the full length of the cart tray. This pipe reinforcement is held to the cart by means of clamps instead of bolts. The tray is reinforced with a ½" continuous rod rolled into the top edge, thereby making the tray triply reinforced. Wheels are 42" in diameter, equipped with grease cups. Can be furnished with either flat tires or oval tires, and can also be furnished with roller bearing wheels if desired.

Width 39", length 51½", height 42", weight 264 lbs.

Sterling No. 3 Cart

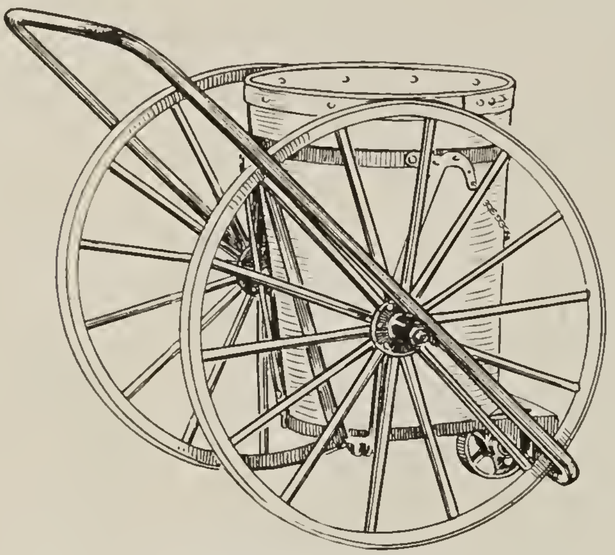


One of the original Sterling carts and a very popular cart. The tray is of 14 gauge reinforced by ½" rod rolled in top edge. Can be furnished with either 30" or 36" wheels equipped with grease cups. Also made for roller bearings where so desired. Your special attention is called to the fact that this cart is equipped with an underslung axle thereby leaving the inside of the tray free from obstructions.

Width 36½", length 50", height 31", weight 190 lbs., capacity 6 cu. ft., load capacity 1000 lbs.

Parts are interchangeable on all Sterling barrows

CAN CARRIERS



With Wood Wheels
Wirt's Twentieth Century
CAN CARRIER

In designing this carrier we have taken into consideration the convenience of the operation and general utility as well as the problem of providing sufficient strength and proper construction to meet conditions of service. It will be noticed from the illustrations that the handle extends well up so as to be in a natural position for pushing. The man is not required to lean over into a hunched position when moving the carrier about. It will also be noticed that the weight of the can bears down on the front of the carrier and not the rear, therefore when crossing car tracks or other uneven places where it is desirable to raise the small wheel, the sweeper merely presses down on the handle in place of having to lift up the back of the cart and carry part of the load over. By conserving the strength of the men in this part of the work instead of compelling them to use an unhandy, cumbersome and tiring machine, the natural result is a better and a greater amount of cleaning.

The frame of the Twentieth Century Can and Bag Carrier passes outside of the wheels. It gives support to the ends of the axle, keeps the wheels running true and protects them if the carrier is struck by passing vehicles.

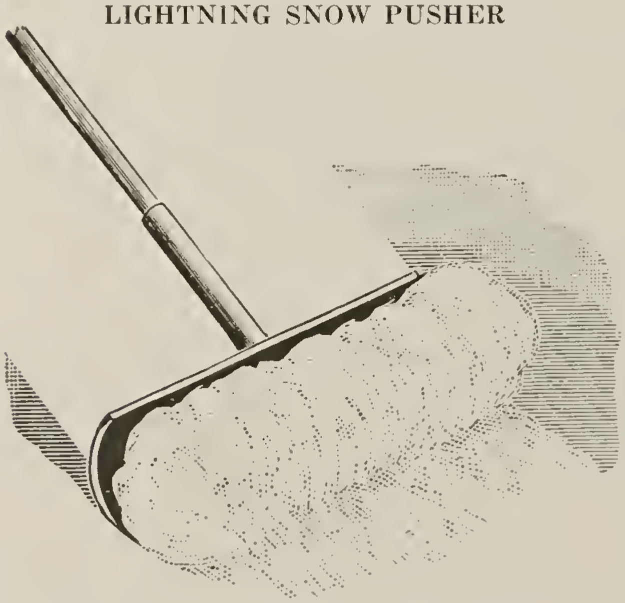
The axle is made in one continuous piece, and by passing under the platform it adds to the strength and rigidity of the carrier.

The platform is close to the ground and stands firm and solid, with no tendency to tilt when a heavy can of sweepings is being removed.

Used in all large cities

Carrier only with wood wheels.................	Each $50.00
Carried only with steel wheels...............	Each $45.00

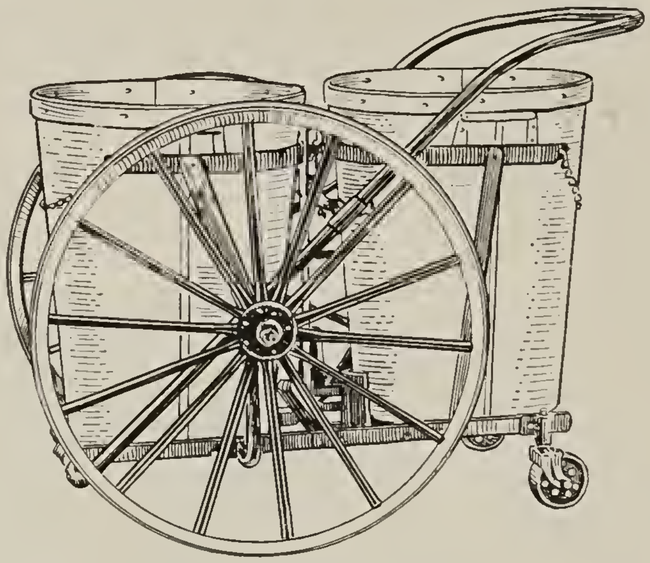
LIGHTNING SNOW PUSHER



A time and labor saver for cleaning streets, crossings, pavements, areaways, platforms, etc.

The pusher is very simple in construction, but it does the work in fine style. The curved blade has the effect when it is pushed over the pavement of turning the snow somewhat similar to the way that a plow acts, turning the snow over and forward, in this way the snow does not pack against the pusher but moves forward, making progress easy and cleaning a broad path each time.

Blade 24 inches long; 5 foot handle. List Price, each . . $10.00



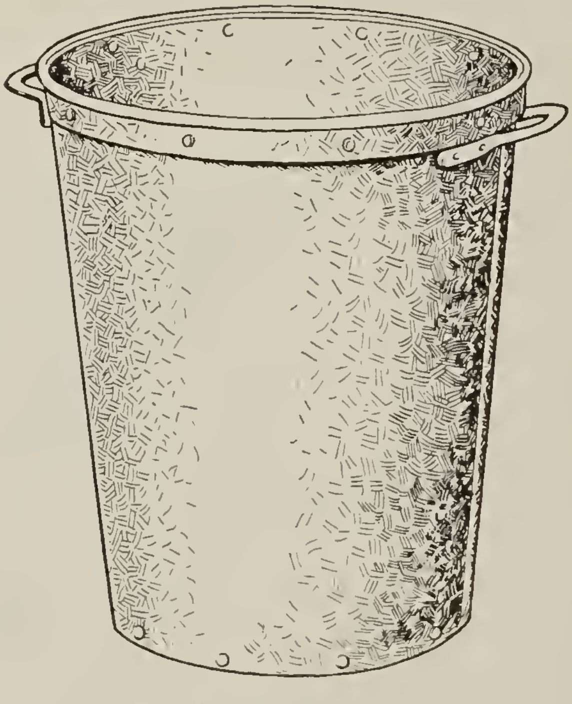
Wirt's Twentieth Century
DUPLEX CAN CARRIER

The illustration shows the carrier with the two cans in place. It is usual to put the sweepings in the front can and the paper and rubbish in the rear can, although the cans can be used either way, or both cans for sweepings.

This carrier although not as easily handled as the single can carrier works comparatively easy considering the load to be carried.

The front wheels are of wood with steel tire and sturdy construction, the small wheels are heavy cast iron swivelling in a socket attached to the platform.

The carrier is so designed that it will not tip forward with a full can in front and an empty one in back, assuming that the cans are properly placed on the carrier.



Twentieth Century
STREET CLEANING CAN

These cans are constructed according to the following specifications:

Inside Dimensions—Top, 19″. Bottom, 15¼″. Depth, 23″.

Sides—No. 18 American gauge steel.

Bottom—No. 18 American gauge steel, flanged 1″, inverted into body of the can and secured by a steel ring of 1″ by 3/16″ material set under the bottom inside the flange.

Top—Formed by a band 1½″ wide by 3/16″ thick, with the side plates curled over the upper edge.

Handles—Round steel, 7/16″ diameter, fastened under the top band by four ¼″ rivets.

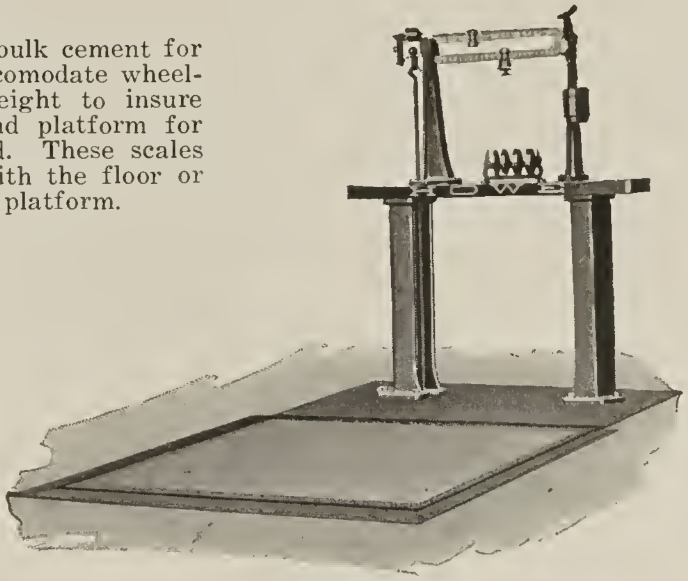
Galvanized after being made. Capacity, 3 cubic feet.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

THE IDEAL BULK CEMENT SCALE

These two scales are built especially for weighing bulk cement for more accurate batching. The platforms are large to accomodate wheelbarrows or concrete carts yet everything is light weight to insure greater accuracy. Room is left between the beam and platform for the weighman to work. Platform is built of hardwood. These scales can be dropped in a pit to make the platform level with the floor or they can be equipped with a ramp for wheeling load to platform.

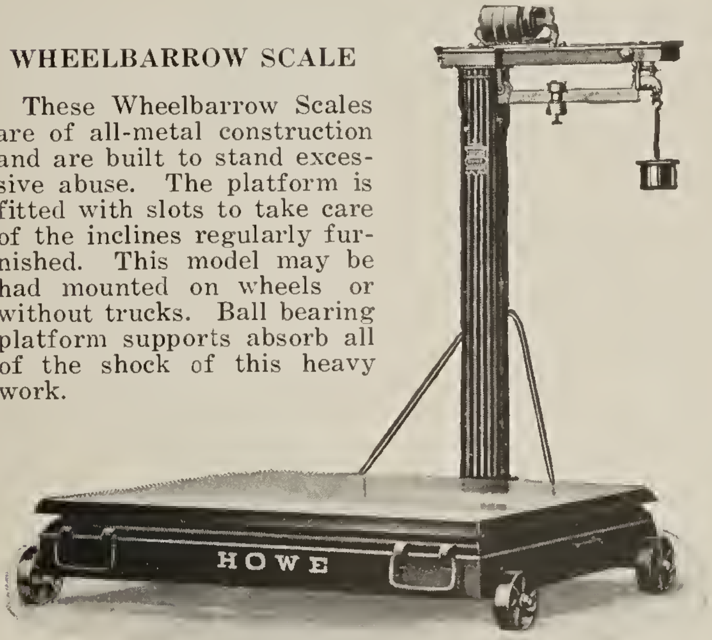
No.	Capacity	Platform size	Wt.
536	1500 lbs.	48″x54″	830 lbs.
1090	2500 lbs.	46″x38″	830 lbs.



BULK CEMENT SCALE

WHEELBARROW SCALE

These Wheelbarrow Scales are of all-metal construction and are built to stand excessive abuse. The platform is fitted with slots to take care of the inclines regularly furnished. This model may be had mounted on wheels or without trucks. Ball bearing platform supports absorb all of the shock of this heavy work.



Wheelbarrow Scale

Wheelbarrow Scales (continued)

With Incline—Without Wheels

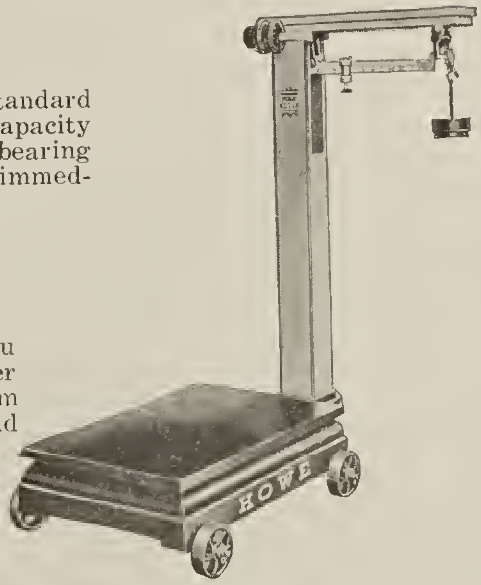
No.	Capacity	Platform size	Wt.
143	1000 lbs.	43″x30″	690 lbs.
1114	2000 lbs.	44″x35″	817 lbs.
	With Incline—With Wheels		
142	1000 lbs.	43″x30″	760 lbs.
1113	2000 lbs.	44″x35″	841 lbs.

PLATFORM SCALES

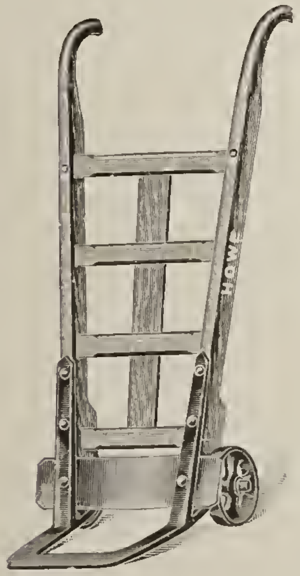
For all general weighing purposes we recommend these little standard Platform scales. They are made in a variety of sizes ranging in capacity from 500 to 2500 pounds. These scales are all equipped with the ball-bearing platform. We carry these scales in our Kansas City warehouse for immediate shipment.

OTHER SCALES

We are in a position to furnish you with any variety of scales and whenever you are confronted with this problem write us for our recommendations and prices.



Warehouse Scale

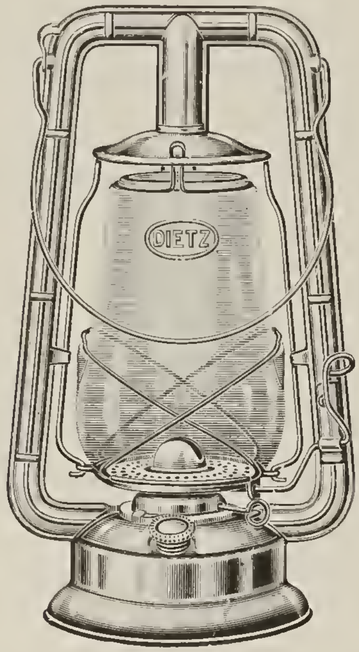


Warehouse Truck

WAREHOUSE AND PLATFORM TRUCKS

We are in a position to furnish you with platform or warehouse trucks of any description. Our two wheel trucks are made in a variety of sizes which will meet your needs. Platform Trucks are made in all heights and with fixed or swivel wheels. Write for descriptive literature and prices on trucks of any kind.

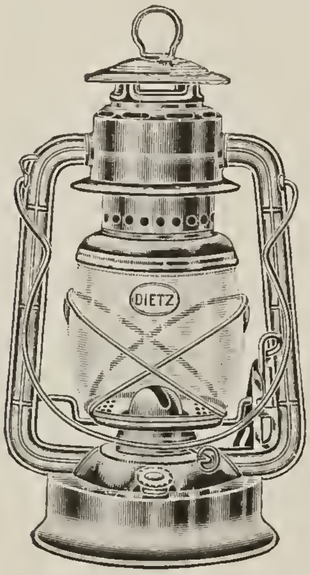
MONARCH LANTERN



Hot Blast Kerosene Lantern, combines great strength and refinement in construction. Beaded, round tubes are substituted for the square tube design. Attractive appearance, lighting dependability and moderate price make the "Monarch" a consistently big seller. With a ruby globe it is extensively used by contractors. Height over all 13½". Uses ⅝" wick. Fount capacity 20 hours. Uses Fitzall "Loc-Nob" globes.

List Price, each $1.80

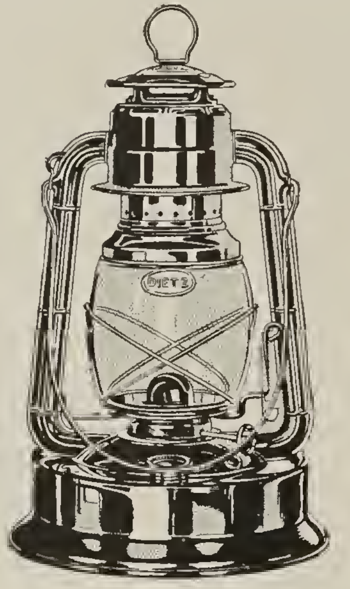
"LITTLE WIZARD" LANTERN



Cold Blast, kerosene lantern. Bright tin finish with Terne Plate bottom. An unusual feature in such a small lantern is the wide "Loc-Nob" globe. The globe lift is specially braced. This is an ideal lantern for the boy scout and camper. Height over all, 11½". Uses No. 1, ⅝" wick. Weight per doz. 24 lbs. Uses "Little Wizard Loc-Nob" globe.

List Price, each $2.00

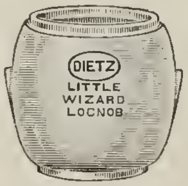
"LITTLE GIANT" LANTERN



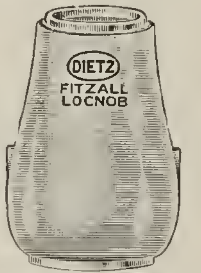
Cold Blast. kerosene lantern. Bright tin finish with Terne Plate bottom. This lantern with a full supply of oil and a clean wick, turned up to moderate flame, will furnish a bright, dependable light continuously for three days, in any kind of weather. Another feature is that the broad base and low center of gravity makes it almost impossible for it to be blown over. Height overall, 11½". Uses No. 1, ⅝" wick. Weight, per doz., 31 lbs. Uses "Little Wizard Loc-Nob" globe.

List Price, each........................$2.20

LANTERN GLOBES



Dietz "Little Wizard Loc-Nob"



Dietz "Fitzall"

Dietz Lantern Globes have undergone the refining touches of time and experience in relation to the quality of glass, shapes, heat-resisting qualities, finish and fit. Dietz Globes are carefully inspected and are positively all "Firsts," free from streaks and blemishes. No "seconds' or "pot luck" globes are sold for Dietz Lanterns. All Dietz Colored Globes are solid colors—not painted or flashed on—but genuine Pot Ruby.

Dietz "Fitzall Loc-Nob" Globes

Height	Dia. Top	Dia. Bottom
$6\frac{9}{16}$"	$2\frac{13}{16}$"	$3\frac{7}{16}$"

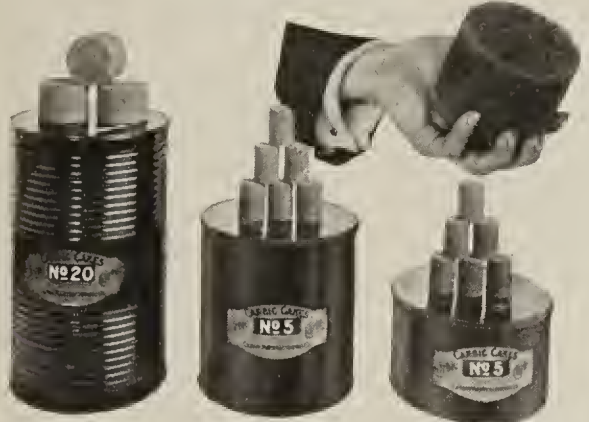
List Price, Each ....$ .50

Little Wizard "Loc-Nob" Globes

Height	Dia. Top	Dia. Bottom
$3\frac{5}{16}$"	3¼"	$2\frac{13}{16}$"

List Price, Each ....$ .40

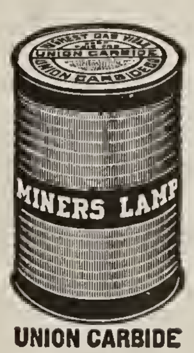
CARBIC CAKES



Acetylene for the Carbic Light flame is generated by water coming in contact with Carbic, a unique fuel in cake form. Each cake of a given size will produce approximately the same number of cubic feet of acetylene gas. Carbic is packed in steel drums which are not to be returned. Each cake is wrapped in oil paper.

	No. 20	No. 5	No. 5
Diameter, inches	4	2	2
Cakes in drum	40	108	54
Shipping weight	107	76	39
Price, K. C. or Tulsa	$8.50	$8.50	$5.50

UNION CARBIDE



UNION CARBIDE
PACKED IN BLUE
AND GRAY DRUMS

Because of its high gas yield, special selection, uniform size, freedom from dust and its uniform quality, is the most economical and satisfactory carbide for miners' lamps.

No. 100M—For Miners' Lamps, in 100-pound drums. F. O. B. Kansas City per 100 lbs. $11.70

No. 25M—For Miners' Lamps. In 25-lb. drums, not less than four drums on an order. F. O. B. Kansas City, per 100 lbs. $13.30

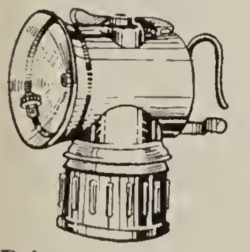
No. 10M—For Miners' Lamps. In 10-lb. cans. Six cans to a case. F. O. B. Kansas City, per case $10.60

No. 2M—For Miners' Lamps. In 2-lb. cans. Twenty-four cans to a case. F. O. B. Kansas City, per case $9.60

Don't sell generator size.

CAMEO CARBIDE

No. 100MC—For Miners' Lamps, in 100-pound drums. F. O. B. Kansas City, per 100 lbs. $11.20

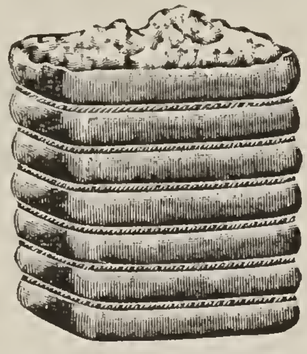


MINERS' CAP LANTERNS

Polygon Feed; Lighter attachment; Concave Reflector 2½ inches diameter; Round Hook. Weight 5 ounces. Polished Brass Finish. No. 707 Style.

Price per dozen $19.00

COTTON WASTE—In Bales



Put up in bales of either 50 or 100 lbs. approx. wgt. Will furnish any quantity.

Nos.	1	2	1	2
Color	White	White	Col.	Col.
Per lb., all grades	Market			

Waste in 5 and 10-lb. Bales

We can also furnish White Waste in 5 and 10-lb. bales for small shops, private garages, etc.

Per bale . . . . . Market

Waste in Cartons

This is a small paper carton containing approx. ½ lb. of white waste.

No. 1685 . . . . . Per doz. cartons, Market

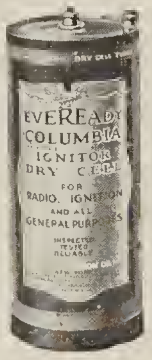
WIPING RAGS

Renovated. Much more satisfactory than waste for many purposes. Free from buttons, hooks, pins, etc. Used for grease rags, cleaning, polishing, etc. Put up in 50 and 100-lb. bales.

	Pure	Near	
Color	White	White	Colored
Per 100 lbs.	$33.00	$32.00	$29.00

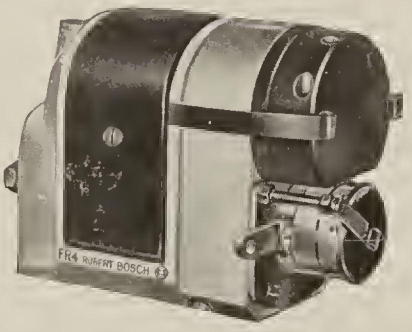
WOOL WASTE (For Journal-Box Packing)

Net Prices per pound . . . . . $ .14



Eveready
Columbia
Hot Shot
Battery
National Carbon Co. Inc.

Hotshot Battery, each $2.30



Robert
Bosch
Magnetos
and
Spark Plug

SPARK PLUGS

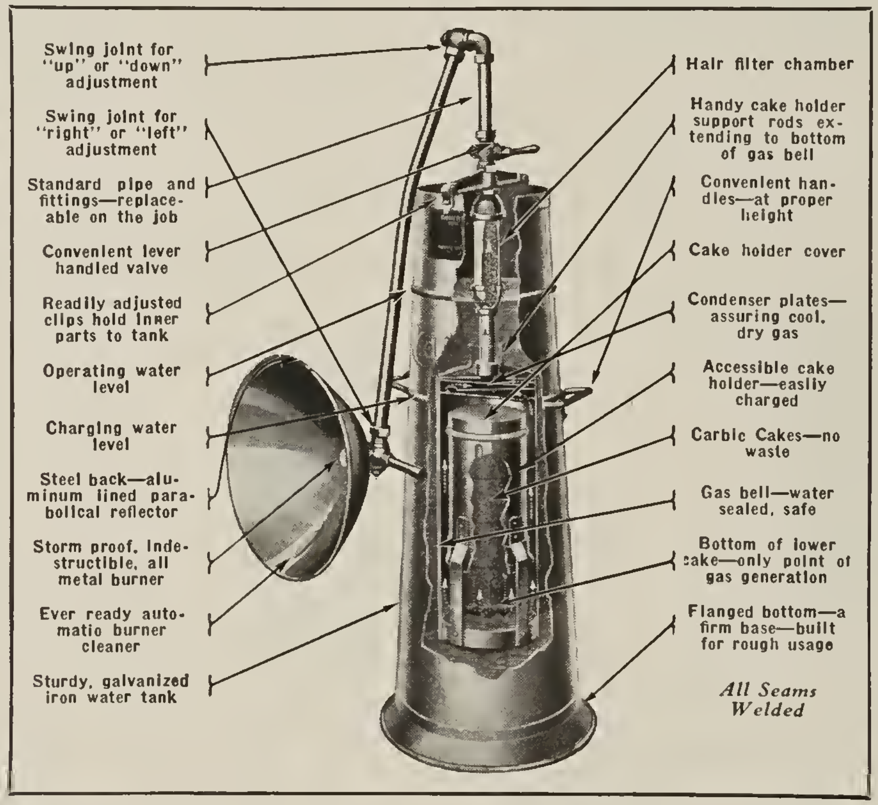
Bosch Magnetos and Spark Plugs are highly recommended for high compression motors and Industrial Engines. Made of the very best material. Specially designed to withstand any operating condition or engine requirement.

ROBERT BOSCH

Carbic
Flood Lights

CARBIC FLOOD LIGHTS have been regarded as leaders in the portable lighting field for the past fifteen years. They are used by:

General Contractors
Reinforced Concrete Contractors
Paving Contractors
Excavating Contractors
Sewer Contractors
Bridge Contractors
Dredging Contractors
Pile-Driving Contractors
Plastering Contractors
Fire Departments
Public Utilities
Salvage Corps
Mines
Quarries Gravel Pits
Street Railways
Shipyards
Circuses
Airports
Factories
Street Carnivals
Brick Manufacturers


Swing joint for "up" or "down" adjustment
Swing joint for "right" or "left" adjustment
Standard pipe and fittings—replaceable on the job
Convenient lever handled valve
Readily adjusted clips hold inner parts to tank
Operating water level
Charging water level
Steel back—aluminum lined parabolical reflector
Storm proof. Indestructible, all metal burner
Ever ready automatic burner cleaner
Sturdy, galvanized iron water tank
Hair filter chamber
Handy cake holder support rods extending to bottom of gas bell
Convenient handles—at proper height
Cake holder cover
Condenser plates—assuring cool, dry gas
Accessible cake holder—easily charged
Carbic Cakes—no waste
Gas bell—water sealed, safe
Bottom of lower cake—only point of gas generation
Flanged bottom—a firm base—built for rough usage
All Seams Welded

The use of Carbic Flood Lights in construction or demolition work or any other work that involves the use of heavy equipment, is most logical because in order to receive the maximum return on money invested in such equipment it is often necessary to keep it in productive operation twenty-four hours a day. For concrete finishing, both in building construction and highway work, Carbic Flood Lights are a necessity.

The outstanding features of the Carbic Flood Light are: Simplicity, Safety, Economy in Operation, Undiminishing Candle Power, No Loss in Intermittent Service, All-Weather Operation. These advantages are explained in detail below.

Carbic Flood Lights are of extremely rugged construction consisting of but three simple parts which slip easily together and cannot be wrongly assembled. Seams and joints are gas welded and the assembly is completely galvanized.

Charging with cakes of Carbic, processed carbide, which are individually wrapped in oiled paper for handling, is a clean and simple operation that takes but a few minutes of any workman's time. No measuring is necessary.

The Carbic Flood Light functions without any moving parts. The cakes of Carbic rest one on top of another in the holder When the gas valve is opened the water rises in gas bell and comes into contact with the bottom of the lowest cake until sufficient acetylene is generated to force the water down again below the level of the cake. This process is continually repeated during the operation of the light. As the lowest cake is consumed the one above it takes its place. Thus the point of gas generation remains at a constant level and an extremely uniform and safe gas pressure of less than one pound per square inch is maintained. Fluctuation of the flame is avoided.

Partially consumed cakes of Carbic remain clean, solid and dry, and can be temporarily left in the holder or put back into the drum for later use. The unused portion never rests on an accumulation of spent Carbic, since the residue settles to the bottom of the water tank.

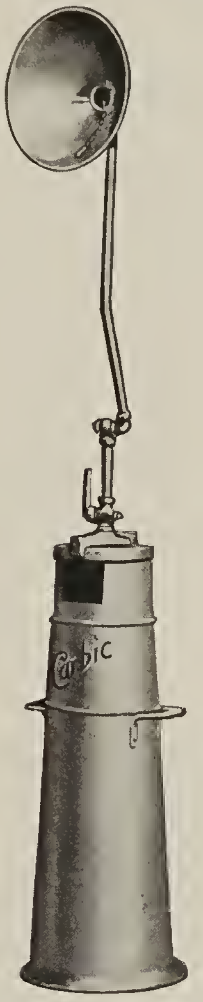
Carbic Flood Lights can be used for intermittent service without loss of gas, since generation takes place only as required. Through the unique operating principle and the use of Carbic, after-generation is eliminated.

In all climates and under all weather conditions Carbic Flood Lights operate equally well. The indestructible, all-metal burner is wind, rain, and storm-proof.

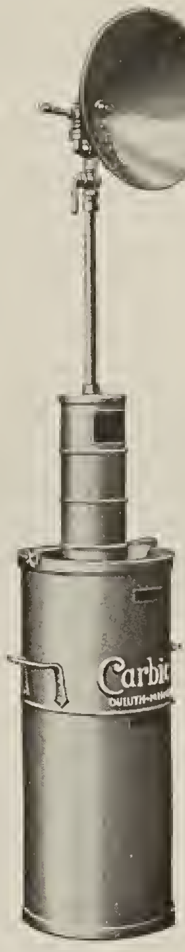
The Carbic Flood Light is fool-proof and has many unusual safety features. Only a small volume of gas is present at any time. If the light is accidentally upset the water simply runs out and gas generation stops immediately. Carbic Flood Lights are listed as standard by the Underwriters' Laboratories, Inc.

Carbic Flood Lights are economical. Any model will operate for only a few cents an hour.

Carbic



Style No. 2
Price $48.00



Style No. 13
Price $55.00

Carbic Flood Lights

STYLE NO. 2

The Carbic Flood Light Style No. 2 has a wide range of application and is used wherever a powerful, portable source of general illumination is required. Swing joints permit the reflector to be set at any horizontal or vertical angle.

STYLE NO. 3

The principal features of the Style No. 3 Light are large capacity and two burners. Each burner is of the same size as the single burner of the No. 2 Light. The two reflectors can be turned in the same direction or in different directions without moving the light itself. The capacity for Carbic in this light is sufficient to operate both burners simultaneously for 12 hours, or one burner alone for 24 hours.

STYLE NO. 13

The Style No. 13, one of the most powerful Flood Lights made, is used where a large volume of illumination is required. Its unusually long burning period obviates the necessity of frequent recharging.

STYLE NO. 14

The No. 14 Light is easily carried by one man. A cover is provided to prevent the splashing out of water.

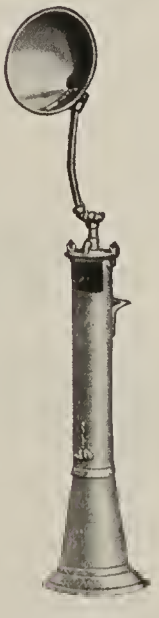
The beam of light projected will penetrate fog, smoke and steam to a remarkable degree. For this reason, and because of its extreme portability, it is a favorite for fire department use and for other rescue and salvage work as well as for emergency repair work.

STYLE NO. 15

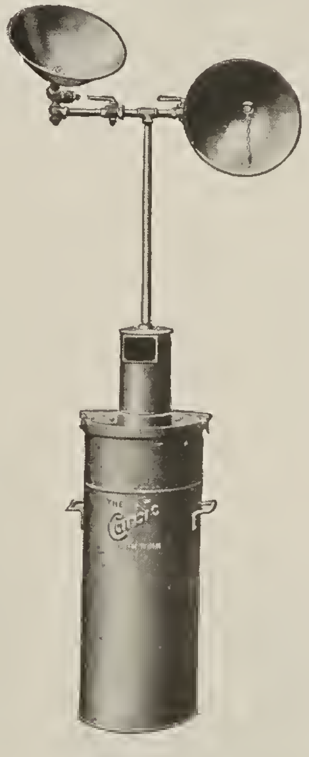
In construction, appearance and operation the Style No. 15 Light is the same as the No. 2. Because of its smaller size and reduced weight, this light is convenient where space is limited or where it has to be moved frequently.

SPECIFICATIONS

Style	No. 2	No. 3	No. 13	No. 14	No. 15
Height					
Reflector up	79 in.	79 in.	84½ in.	55¾ in.	71 in.
Reflector down	45 in.	....	....	36 in.	39½ in.
Weight					
Empty	36 lbs.	79 lbs.	66 lbs.	16 lbs.	36 lbs.
Charged	115 lbs.	200 lbs.	196½ lbs.	30 lbs.	91 lbs.
Shipping	74 lbs.	118 lbs.	110 lbs.	37 lbs.	65 lbs.
Diameter at Base	14 in.	14 in.	14 in.	11 in.	12¾ in.
Diam. of Reflector	13 in.	13 in.	15 in.	10 in.	13 in.
Burner	No. 25	No. 25	No. 013	No. 20	No. 20
No. Cakes in Charge	1 to 4	1 to 8	1 to 8	1 to 4	1 to 2
Size of Cake	No. 20	No. 20	No. 20	No. 5	No. 20
Water Required	7 gal.	12 gal.	12 gal.	1¼ gal.	5½ gal.
Burns	12 hrs.	12 hrs.	20 hrs.	5 hrs.	9½ hrs.
Candle Power	8,000	16,000	12,000	4,000	5,000
Price	$48.00	$60.00	$55.00	$33.00	$40.00



Style No. 14
Price $33.00



Style No. 3
Price $60.00

Oxweld Acetylene Company

Unit of Union Carbide and Carbon Corporation
New York Chicago San Francisco

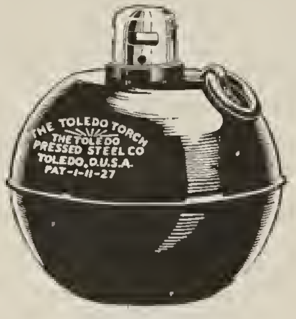
MODERNIZED PROTECTION FOR CONSTRUCTION JOBS AT NIGHT

The complete answer to the modern problem of protecting construction work at night, is found in the Toledo Torch.

The Toledo Torch signal differs from all other lights on the road. It gains immediate attention and holds it. There is plenty of light to clearly define the nature and extent of the obstruction. Because of this the Toledo Torch, more completely than any other device now made, eliminates accidents.

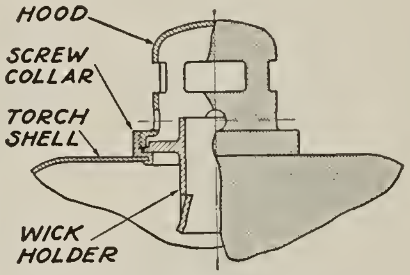
These torches are now being used by practically all of the State Highway Departments in the United States, as well as many hundreds of county highway departments, cities, public utilities and many thousands of contractors in every part of the country.

Toledo Torches have been approved and recommended by the largest insurance people. They have also received the A. G. C. Seal for Successful Performance. They are, therefore, offered as an article of proven merit.



THE "LEADER"

An all purpose torch. Self-righting. Kerosene capacity, 3 quarts. Burns up to 48 hours on one filling. 20 gauge steel. Leakproof double seamed joints. Baked enamel finish. Weight 5½ lbs. Packed ¼ dozen per box.



THE ECONOMY BURNER

Proven to be most important development thus far in job protection and economical operation.

This construction, found only on Toledo Torches, is a patented feature. Cuts oil cost in half. Eliminates wick expense. Guarantees protection in any and all kinds of weather. Attracts greater attention, by increasing flame activity without diminishing illumination.

THE "CHAMPION"

Same specifications as "Leader" except gauge of steel which is No. 15, and joints which are welded. Weight 6½ lbs.

THE "STANDARD"

Same as "Leader" except for burner. Burning time limit per filling, about 20 hours.

THE "SPECIAL"

Same as "Champion" except for burner. Burning time limit per filling, about 20 hours.

"SIG-NAL-ITE"

Not self-righting. Stable base. Slightly increased capacity. When equipped with Economy Burner burns up to 54 hours on one filling. Without Economy Burner time limit about 26 hours. Not enamelled. Weight 2½ lbs. Packed ¼ dozen per box.

Sig-nal-ite
THE TOLEDO PRESSED STEEL CO.
TOLEDO, O. U.S.A.

MODEL "F"

An adaptation of features from "Leader" and "Sig-nal-ite." Designed especially for use of common carrier motor vehicles, which are required to carry torches for emergency stops at night. Approved and recommended by Public Utilities Commissions. Diminished height for convenient storage. Double rings for carrying in hanging position. Economy Burner. Burns 30 hours per filling. Packed one pair per box.

Old torches not so equipped may be brought up to date by addition of the Economy Burner.

Economy Burner, complete, each	$ .50
Per dozen	5.00

HOOD

Hood only (steel), each	$ .15
Per dozen	1.80

WICK HOLDER

Wick Holder only, each	$ .15
Per dozen	1.80

SCREW COLLAR ADAPTER

Adapter only	$ .25
Per dozen	3.00

EXTRA WICKS

Per dozen	$1.50	Per gross	$16.00

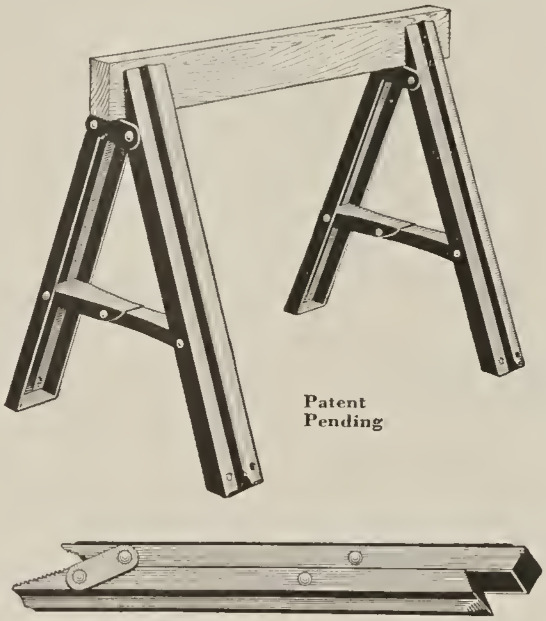
Packed in boxes of one dozen only.

Ownership nameplates may be attached to any Toledo Torches at the factory, without extra charge, in lots of six dozen or more. Nominal charge for smaller quantities.

Complete price information on application.

TOLEDO PRESSED STEEL HORSES

A WONDERFUL TIME AND LABOR SAVER



The use of Toledo Pressed Steel Horses puts an end to the extravagant waste of time and labor employed in the construction of general purpose wooden horses and highway barricades.

It only takes a few seconds to attach these frames to any handy piece of lumber. No skill or previous experience is required. They are as simple to operate as walking up stairs.

The manner in which the jaws grip the lumber insures absolute rigidity and prevents splitting. There are no adjustable parts, yet ordinary thickness variations are readily accommodated. Furthermore, the future usefulness elsewhere of the lumber employed is not affected in any way.

OPEN MANHOLE AHEAD
DANGER

With Toledo Horses, it is possible to completely surround a job with continuous fencing by butting adjacent rails together between the jaws.

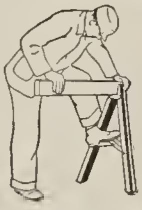
When used as platform supports, Toledo Horses assure a large factor of safety as they will not yield nor sway under tremendous loading.

Their usefulness as barricades, construction trestles, saw horses, etc., about construction work, indicates their still broader usefulness about the shop, warehouse and factory where they are serving in countless applications.

When they are dismantled, they fold up compactly and can be stored or transported in very small space. This handy collapsible feature is very important to those with whom space for equipment is a constant problem.

Toledo Horses are available in heights ranging from 18 inches to 60 inches at intervals of 6 inches and can be supplied to accommodate 1 inch or 2 inch dressed lumber.

Be sure to specify complete requirements when ordering.



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Manufactured By

THE TOLEDO
PRESSED STEEL
COMPANY
Toledo, Ohio

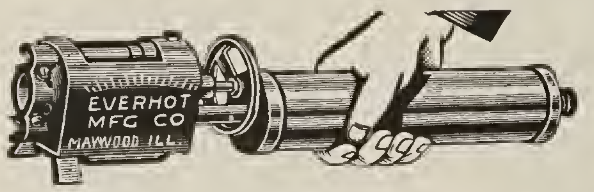
BRANDING — TORCHES — SOLDERING

EVERHOT SOLDERING ATTACHMENTS

THESE TWO EVERHOT TORCHES FURNISH THE HEAT

EVERHOT
America's Brand Makers
MANUFACTURING CO.
MAYWOOD, ILLINOIS

FOR BRANDS AND SOLDERING IRONS



Torches with Shields over Burners

No. 20—Length 16 in., capacity ¾ pint	**$11.00**
No. 30—Length 18½ in., capacity 1 pint	**$12.75**

If a customer wanted an equipment for general soldering and a brand with his name Jones he would order either the No. 20 or No. 30 torch, 1A soldering attachment and brand reading Jones. Cost would be:

No. 20 Torch	$11.00
1-A Soldering Attachment	1.50
Brand reading Jones	5.00

This is $17.50 F. O. B. factory. He would then have a blow torch, soldering iron and branding iron.

Features: Maintains any desired temperature, indoors or out, even in the coldest wind.

A patented preheating chamber acts as a carburetor, changing the fuel into a perfectly dry gas that results in a much hotter flame of pure blue, while using considerably less fuel.

Its regulation is perfect. Can be stopped down to a very low, steady, blue flame.

The needle valve controlling the flame is self-cleaning in the fullest sense, and on account of its construction cannot be injured by screwing in too tightly.

All types have Pump and Filling Cap in handle. Handle made of seamless brass tubing, with ends of solid brass. Does away with necessity of bulky fire pots or stoves for heating irons.

Since the Everhot is self-heating, lighter parts may be used and the whole tool weighs no more than the old style iron.

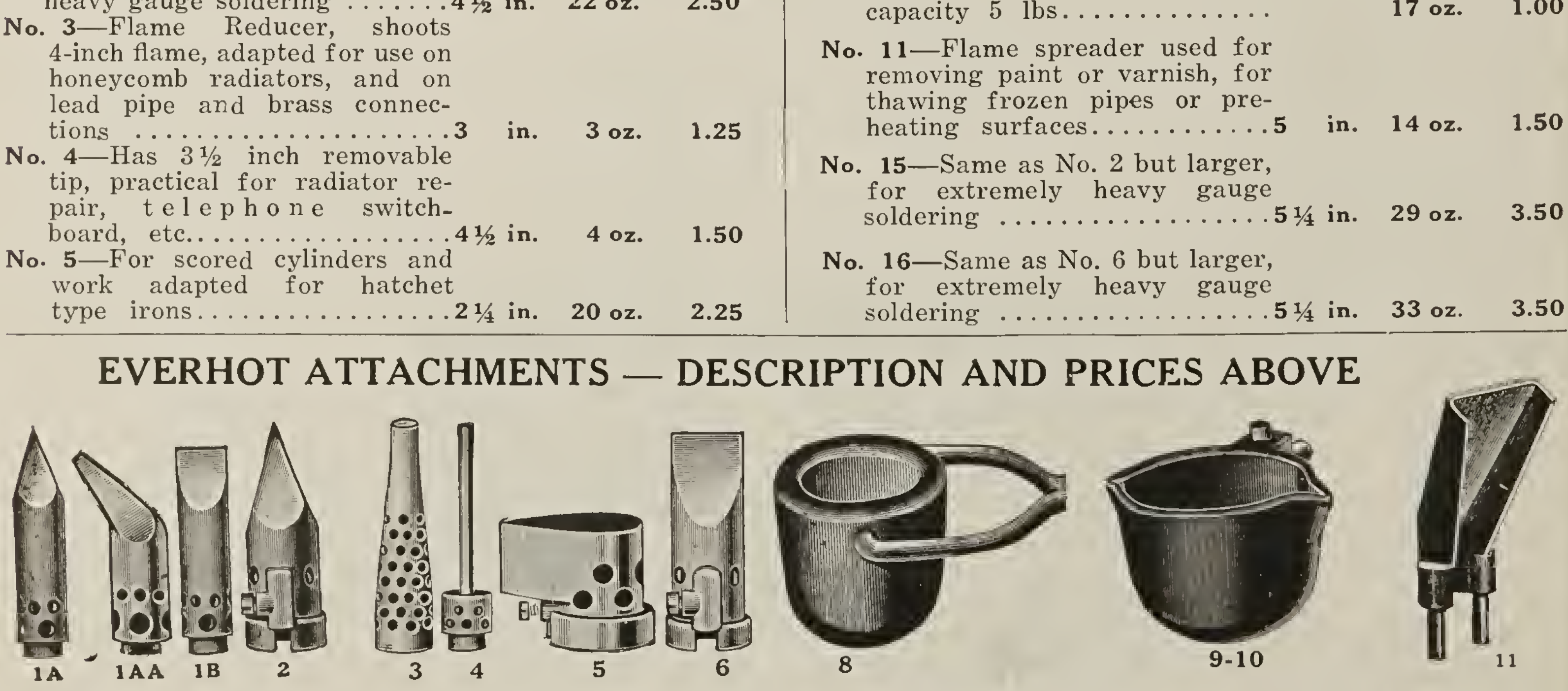
PRICES FOR EVERHOT SOLDERING ATTACHMENTS

ORDER BY NUMBER

ALL ATTACHMENTS ILLUSTRATED BELOW

	Length	Weight	Price
No. 1A—For all ordinary soldering	3½ in.	9 oz.	$1.50
No. 1AA—Same as 1A, but bent to take care of soldering at any angle	4 in.	9 oz.	1.50
No. 1B—Used on light armature work	3⅛ in.	9 oz.	1.50
No. 2—Roofing, gutter or other heavy gauge soldering	4½ in.	22 oz.	2.50
No. 3—Flame Reducer, shoots 4-inch flame, adapted for use on honeycomb radiators, and on lead pipe and brass connections	3 in.	3 oz.	1.25
No. 4—Has 3½ inch removable tip, practical for radiator repair, telephone switchboard, etc.	4½ in.	4 oz.	1.50
No. 5—For scored cylinders and work adapted for hatchet type irons	2¼ in.	20 oz.	2.25
No. 6—Armature or roofing work, or other heavy gauge soldering	4½ in.	25 oz.	$2.75
No. 8—Electrician's dipping cup	..	8 oz.	1.00
No. 9—Ladle used to pour pipe joints, rebabbitting bearings; capacity 2 lbs		11 oz.	1.00
No. 10—Same as No. 9 except capacity 5 lbs		17 oz.	1.00
No. 11—Flame spreader used for removing paint or varnish, for thawing frozen pipes or preheating surfaces	5 in.	14 oz.	1.50
No. 15—Same as No. 2 but larger, for extremely heavy gauge soldering	5¼ in.	29 oz.	3.50
No. 16—Same as No. 6 but larger, for extremely heavy gauge soldering	5¼ in.	33 oz.	3.50

EVERHOT ATTACHMENTS — DESCRIPTION AND PRICES ABOVE



All of these Attachments as well as Brands fit into the end of the Burners of Everhot Torches No. 20 and No. 30

BRAND — STOP THE LOSS OF TOOLS — BRAND

EVERHOT CONTRACTORS' BRANDING IRON

EVERHOT
America's Brand Makers
MANUFACTURING CO.
MAYWOOD, ILLINOIS

Products: BRANDING IRONS, HAND TORCHES, SOLDERING IRONS.

Branding Prevents Loss: The money you spend each year for replacing hammers, shovels, picks, wheelbarrows, planking and other common tool equipment is enormous and particularly when you realize that this equipment doesn't wear out—it naturally evaporates—it's gone.

Branding doesn't prevent theft, it stops it. Say it's conscience, or human nature, or put it any way you want to, the fact remains that branded equipment is hot—too hot to have in your possession, particularly when the brand is that of a powerful contractor.

In addition to the money loss, many a friendship of years' standing has been broken through misappropriation of tools or equipment, either intentional or otherwise.

For example: Jones and Smith are both on the same job. Jones leaves the job first and his men take some of Smith's planking. Probably it is not intentional, but it may result in harsh words and broken friendship. Protect against this with an Everhot branding outfit.

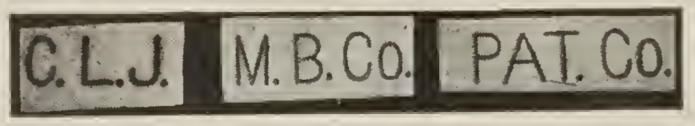
Everhot Branding Iron: Contractors have long felt the need for a simple, inexpensive method of marking tools, ladders, wheelbarrows, scrapers, scaffolding and other equipment that would be available any time, any place.

The Everhot is just such a tool, designed especially for contractors. It can be used anywhere; the fuel, ordinary gasoline, is in the handle.

The Everhot attains the proper temperature in from five to seven minutes. It can be used continuously, for the flame maintains this temperature for hours, until fuel chamber needs refilling.

The same Everhot tool may also be used as a soldering iron, or blow torch.

Brands: Made of standard Gothic branding letters, priced at $1.00 per letter, in all sizes up to 1 inch, inclusive, with a minimum charge of $4.00.



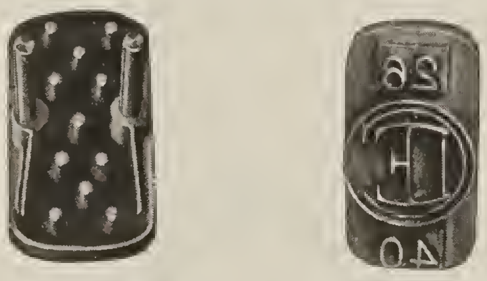
For example:
Brand reading C. L. J. is priced at $4.00 (minimum)
Brand reading M. B. Co. is priced at $4.00
Brand reading PAT. Co. is priced at $5.00

On larger sized standard Gothic branding letters, 1¼ in., 1½ in. and 2 in., the price is $1.25 per letter, also with a minimum charge of $4.00.

These prices are on brands only.

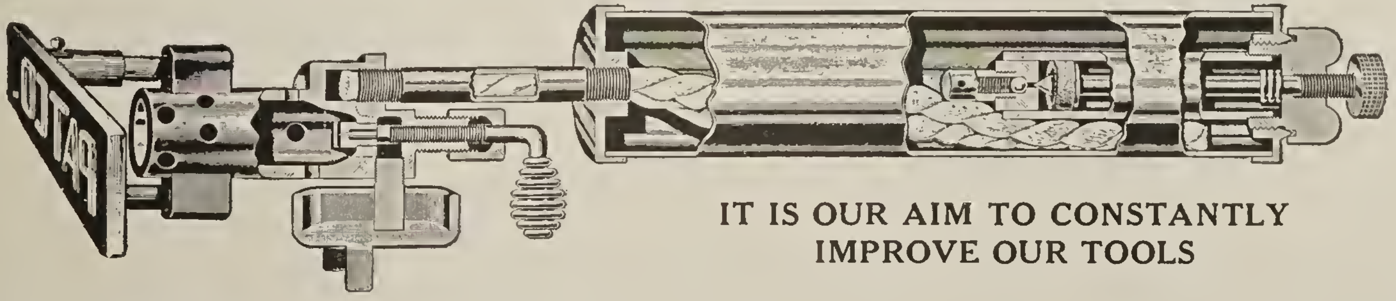
Description and prices on torch with which these brands are used are on reverse page.

Special designs of monograms, trade marks, etc., quoted on request.



PHOTOS SHOW CONSTRUCTION OF BRANDS

Application: Everhot brands are used with Everhot torches No. 20 and No. 30. The brands are fastened with posts, which are a part of the brand, into lugs on the burner head of the torch. The skeleton view shown on bottom of this page is complete with the exception of the shield over the burner head. This was eliminated here so that the construction of the torch would be easier to understand.

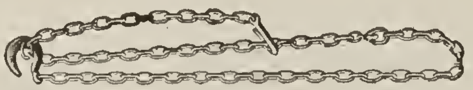


IT IS OUR AIM TO CONSTANTLY
IMPROVE OUR TOOLS

Construction and Guarantee: In the construction of the Everhot, only the best materials are used. Skilled workmen make special efforts to see that all parts are perfectly fitted.

We guarantee Everhot equipment to be free from defects in material or workmanship, and to operate as represented. Any part which shall prove defective within six months after date of purchase, if returned to us, transportation charges prepaid both ways, will be replaced. No person is authorized to assume for us any rights in connection with the sale of our tools. This guarantee is void on any tool which has been subject to accident, neglect or misuse, or has been repaired outside our factory.

CABLE LOG CHAINS



Self-colored; with wrought swivel; round and grab hooks.

5/16-Inch Diameter

Nos.	5–10	5–12	5–14	5–16
Length, feet	10	12	14	16
Weight, lbs.	12	14	16	18½
Per Each	$3.00	$3.70	$4.00	$5.00

⅜-Inch Diameter

Nos.	6–10	6–12	6–14	6–16
Length, feet	10	12	14	16
Weight, lbs.	16	21	24	26
Per Each	$4.25	$5.00	$5.50	$6.50

7/16-Inch Diameter

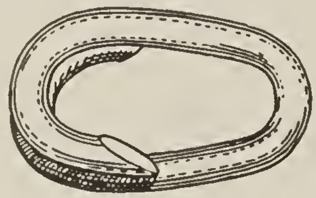
Nos.	7–10	7–12	7–14	7–16
Length, feet	10	12	14	16
Weight, lbs.	27	29	33	37
Per Each	$5.50	$6.50	$7.00	$8.50

½-Inch Diameter

Nos.	8–10	8–12	8–14	8–16
Length, feet	10	12	14	16
Weight, lbs.	30	33	38	42
Per Each	$6.80	$8.00	$9.00	$10.50

For chain strength see index.

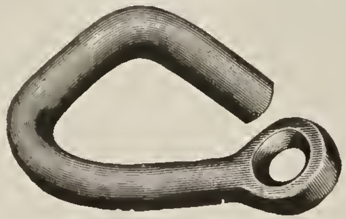
REPAIR OR OPEN LINKS



Wrought; with open end; for log chain repair; self-colored.

Nos.	20	22	26	28
Iron diameter, inch	⅜	⅜	7/16	½
Length inside, inch	2	2½	2½	2½
Length, inches	2¾	3¾	3	3¼
List price, per 100	$8.80	$10.00	$12.30	$15.00

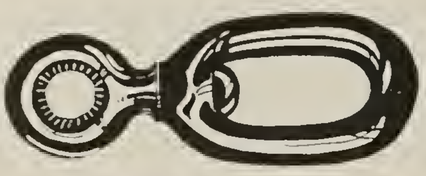
COLD SHUTS



Wrought Steel, Natural Finish.

No.	14	516	38	12	58
Size Iron, Inch	¼	5/16	⅜	½	⅝
Net Wt. per 100, Lbs.	5¼	10	17	38	75
Per Hundred	$7.50	$8.50	$8.80	$12.50	$18.00

CHAIN SWIVELS



Malleable Iron

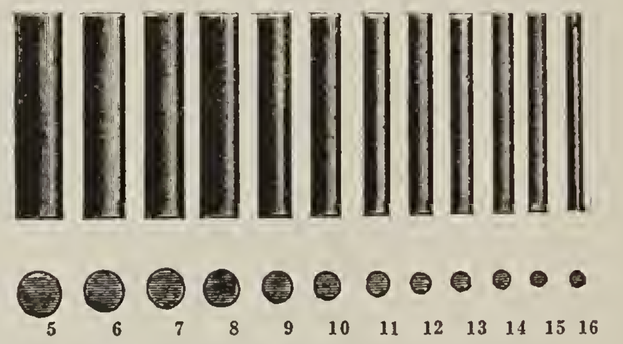
Nos.	2520E	2525C	2525D	2525E
Size chain, inches	5/16	⅜	7/16	½
Diameter eye, ins.	9/16	⅝	11/16	¾
Reach, inches	3	3⅜	3¾	4¼
Weight, oúnces	6	9½	13	16
Each	$ .25	$ .35	$ .45	$ 50.

PLAIN ANNEALED WIRE

Nos.	6	7	8	9
Advance per 100 lbs.	15	15	15	15
Per 100 pounds	$7.00		$7.00	$7.00
Nos.	10	11	12	13
Advance per 100 lbs.	20	25	30	40
Per 100 pounds	$7.10	$7.20	$7.30	$7.50
Nos.		14	15	16
Advance per 100 pounds		50	70	90
Per 100 pounds		$7.70	$8.10	$8.50

One hundred pounds in a coil.

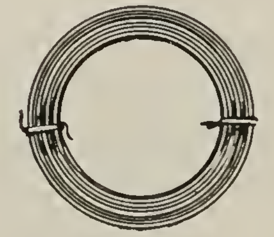
SIZE, WEIGHT AND LENGTH OF WIRE



A. S. & W. Co.'s Wire Gauge Sizes

Gauge Nos.	Weight 100 Feet, Lbs.	Weight One Mile, Lbs.	Feet in One Pound
1	21.23	1,121	4¾
2	18.34	968	5½
3	15.78	833	6¼
4	13.39	707	8½
5	11.35	599	8¾
6	9.73	514	10¾
7	8.03	439	12½
8	6.96	367	14¼
9	5.08	306	17¼
10	4.83	255	20½
11	3.82	202	26
12	2.92	154	34
13	2.24	118	45
14	1.69	89	59
15	1.37	72	73
16	1.05	55	95

STOVE PIPE WIRE



Mallin's Stove Pipe Wire; 50-Foot Coils

No.	1950
Per Dozen Coils	$1.00

One Dozen Coils in a Box

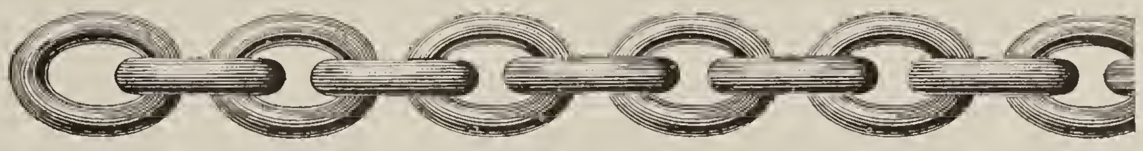
COMMERCIAL CHAIN

Proof Quality **BBB Quality**

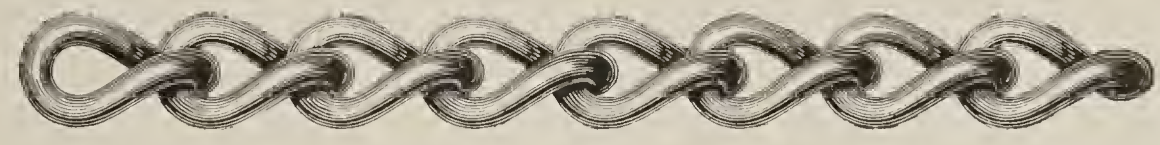
These grades are commonly known as commercial chain. They are made from soft open-hearth welding steel and the link dimensions and workmanship determine the grades.

Proof Coil is known as Common Coil Chain and is suitable for ordinary purposes. It is made carefully and accurately, and this grade will be found satisfactory for common use.

BBB Chain contains short links. It is very carefully welded and receives the finished workmanship of the best chainmakers.



Straight Link



Twist Link

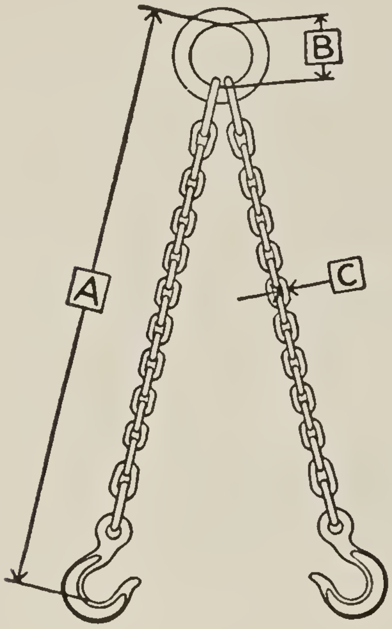
Approximate Dimensions, Tests and Weights

PROOF COIL CHAIN

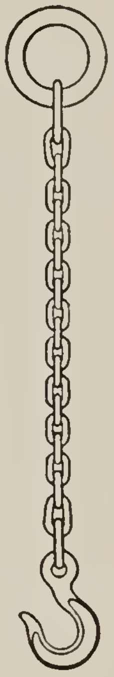
Nominal Size Chain Ins.	Actual Size Material Ins.	Link Dimensions		Links Per Foot	Weight Per 100 Feet Pounds	Average Breaking Strain Pounds	Proof Test Pounds
		Outside Length Ins.	Outside Width Ins.				
3/16	7/32	1 25/64	27/32	12 1/2	40	2090	1,045
1/4	9/32	1 9/16	1 1/16	12	70	3600	1,800
5/16	11/32	1 51/64	1 3/16	10 3/4	105	5440	2,720
3/8	13/32	2 3/64	1 7/16	9 3/4	158	7440	3,720
7/16	15/32	2 5/16	1 11/16	8 3/4	210	10000	5,000
1/2	17/32	2 9/16	1 7/8	8	265	13200	6,600
9/16	19/32	2 15/16	2 1/16	6 7/8	335	16400	8,200
5/8	21/32	3 3/16	2 5/16	6 3/8	410	20000	10,000
3/4	25/32	3 11/16	2 11/16	5 5/8	580	28300	14,150
7/8	29/32	4 5/16	3 3/16	4 3/4	780	38400	19,200
1	1 1/32	4 13/16	3 9/16	4 3/8	1000	49600	24,800
1 1/8	1 5/32	5 7/16	4 1/16	3 7/8	1270	62400	31,200
1 1/4	1 9/32	5 13/16	4 7/16	3 3/4	1560	76800	38,400

BBB CHAIN

3/16	7/32	1 7/32	13/16	15 1/2	43	2600	1,300
1/4	9/32	1 27/64	1	14	78	4500	2,250
5/16	11/32	1 11/16	1 3/16	12	115	6800	3,400
3/8	13/32	1 29/32	1 7/16	11	166	9300	4,650
7/16	15/32	2 5/32	1 5/8	9 3/4	220	12500	6,250
1/2	17/32	2 13/32	1 13/16	9	275	16500	8,250
9/16	19/32	2 3/4	1 15/16	7 3/4	350	20500	10,250
5/8	21/32	3	2 3/16	7 1/8	430	25000	12,500
3/4	25/32	3 7/16	2 9/16	6 3/8	615	35400	17,700
7/8	29/32	4 1/16	3 1/16	5 3/8	820	48000	24,000
1	1 1/32	4 5/8	3 7/16	4 3/4	1045	62000	31,000
1 1/8	1 5/32	5 3/16	3 15/16	4 1/8	1310	78000	39,000
1 1/4	1 9/32	5 5/8	4 5/16	3 7/8	1600	96000	48,000



"DC" SLING CHAINS



For use in connection with hoisting or loading devices.

A very important item in the contractor's equipment. Indispensable in quarries, foundries, factories or mills where heavy loads are conveyed.

Sling Chains in single, double or more branches and in all sizes and lengths; equipped with rings, hooks or enlarged end links to properly balance the chain.

Made in BBB Steel or Iron Dredge Qualities
Dredge Quality recommended

Chain Sizes Inches	Safe Working Load Single Chain—Straight Pounds	Approx. Wt. 100 Ft. Chain Pounds	Standard Lengths Feet
3/8	2,325	167	6, 8, 10, 12, 15
1/2	4,125	280	6, 8, 10, 12, 15, 18
5/8	6,250	430	10, 12, 15, 18, 20
3/4	8,850	625	15, 18, 20
7/8	12,000	810	15, 18, 20
1	15,500	1,050	18, 20, 22

Slip Hook

Drop Forged Slip and Grab Hooks

The Slip Hook is designed to permit the chain to "slip" easily thru the Loop.

The Grab Hook is so shaped that when hooked over a link of the chain it will not slip.

Inquiries and orders should indicate the style of Hook, and the size of the chain on which the hook is to be used.

Grab Hook

Slip Hook				Grab Hook			
Size Chain Inches	Eye Inside Inches	Reach Inches *	Approximate Weight 100 Hooks Pounds	Size Chain Inches	Eye Inside Inches	Reach Inches *	Approximate Weight 100 Hooks Pounds
1/4	13/32	2 1/2	36	1/4	13/32	2 1/4	26
5/16	15/32	2 3/4	56	5/16	15/32	2 1/2	44
3/8	17/32	3 1/4	80	3/8	17/32	2 3/4	67
7/16	19/32	3 5/8	116	7/16	19/32	3 1/4	100
1/2	21/32	4	160	1/2	21/32	3 1/2	145
5/8	25/32	4 1/2	250	5/8	25/32	4 1/4	250
3/4	29/32	5 1/4	375	3/4	29/32	5	404
7/8	1 1/8	7 7/8	1200	7/8	1 1/8	7	1100
1	1 3/8	8 3/4	1900	1	1 3/8	7 1/2	1700

*"Reach" equals distance from upper inside edge of eye to inside bottom loop, or from bearing surface to bearing surface.

"DC" DREDGE QUALITY CRANE CHAIN

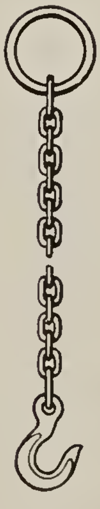
The selection of a dependable crane chain is a matter of serious importance. SAFETY FIRST is a slogan that has general recognition.

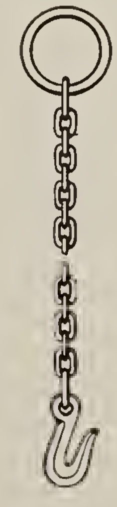
Double refined and re-rolled iron provides the highest factor of safety in the employment of Crane Chains. This element, combined with perfect welding and careful inspection, insures dependability.

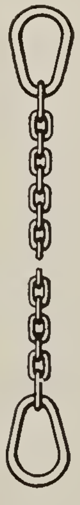
IN "DC" DREDGE QUALITY CRANE CHAIN, all these essentials are embodied—high grade iron, experienced workmanship and careful attention to proof test and inspection. In addition, the links hang at right angles to each other and are absolutely uniform in dimension.

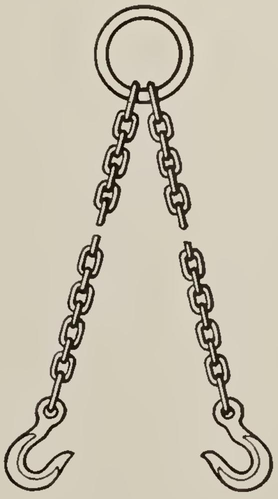
Dimensions, Tests and Approximate Weights

Size Inches	Link Dimensions		Proof Test	Average Breaking Strain	Safe Working Load	Approx. Weight per 100 feet
	Outside Length Inches	Outside Width Inches	Pounds	Pounds	Pounds	Pounds
3/8	1 7/8	1 5/16	3,975	7,950	2,385	167
7/16	2 3/16	1 9/16	5,415	10,830	3,250	214
1/2	2 13/32	1 23/32	7,072	14,145	4,240	280
9/16	2 21/32	1 29/32	8,947	17,895	5,370	355
5/8	2 31/32	2 1/8	11,047	22,095	6,630	430
3/4	3 1/2	2 1/2	15,900	31,800	9,540	625
7/8	4 3/32	2 15/16	21,622	43,245	12,960	810
1	4 21/32	3 5/16	28,275	56,550	16,950	1050
1 1/8	5 1/4	3 3/4	33,400	66,800	20,040	1335
1 1/4	5 3/4	4 1/8	41,250	82,500	24,750	1650
1 3/8	6 7/16	4 5/8	49,900	99,800	29,910	1960
1 1/2	7	5	59,350	118,700	35,600	2450
1 5/8	7 1/2	5 1/2	69,750	139,500	41,800	2740
1 3/4	8	5 3/4	80,800	161,600	48,450	3200
1 7/8	8 3/4	6 1/4	92,750	185,500	55,300	3650
2	9 1/4	6 1/2	105,500	211,100	63,300	4400


Style A


Style B


Style C


Style D

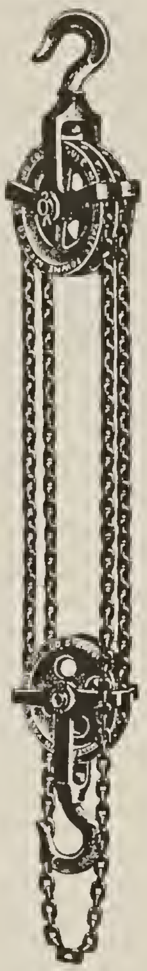
"DC" Sling Chains

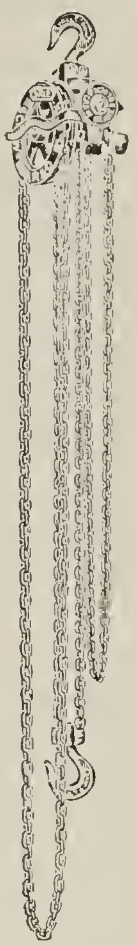
Furnished in single, double or more branches and in all sizes and lengths.

Commercial Grades

Proof Coil, BB and BBB Chain; **Log,** Wagon and Conveyor Chain, Railroad Switch and Brake Chain. Special chains to blue print, sketch or sample.

Yale Differential and Screw-geared Chain Blocks





DIFFERENTIAL

¼ to 3 Tons

Rated Cap. Tons	Std. Lift in Tons	Test Load in Long Tons	Min. Distance between Hooks In.	—Chain Pull—		Ship. Wt. Lbs.	Complete Std. Lift Price Each	Extra Lift Price per Foot
				Lbs.	Ft.			
¼	6	⅜	17	72	18	28	$36.00	$4.80
½	7	¾	21	122	24	36	42.00	4.80
1	8	1½	26	216	30	60	56.00	5.00
1½	8½	2¼	32	246	36	94	72.00	5.40
2	9	3	39	308	42	146	90.00	5.60
3	9½	4½	44	557	38	204	120.00	6.00

The Yale Differential Block is designed for service where comparatively light loads must be handled occasionally. The overhaul of hand chain compares with the Yale spur-geared block, but the hand chain pull is greater by 2½ times.

SCREW-GEARED—DUPLEX

½ to 10 Tons

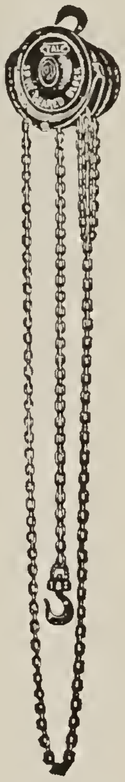
Rated Cap. Tons	*Std. Lift in Ft.	Test Load in Long Tons	Min. Distance between Hooks In.	†Chain Pull		Ship. Wt. Lbs.	Complete Price Each	Extra Lift Price per Foot
				Lbs.	Ft.			
½	8	¾	13	68	40	56	$50.00	$2.50
1	8	1½	16	87	59	73	60.00	2.60
1½	8	2¼	19	94	80	100	80.00	2.70
2	9	3	21	115	93	130	100.00	2.80
3	10	4½	25	132	126	234	150.00	3.00
4	10	6	29	142	155	265	190.00	3.80
5	12	7½	31	145	195	406	280.00	4.00
6	12	9	33	145	252	385	360.00	5.60
8	12	12	36	160	310	491	420.00	6.00
10	12	15	45	160	390	653	550.00	6.40

*Figures denote height in feet which blocks, with regular lengths of chain, will lift from level on which operator stands.

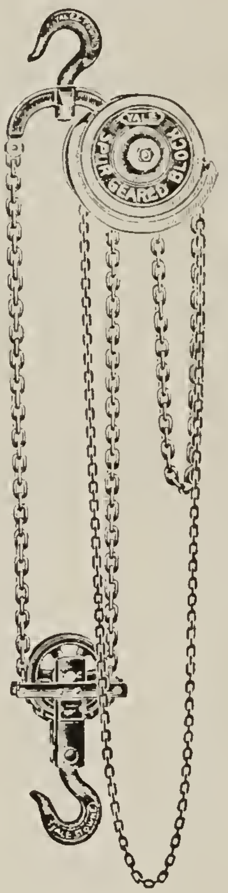
†Figures denote the pull in pounds required to lift the full load, and the number of feet of hand chain which must be overhauled to lift load one foot.

Yale Spur-geared Chain Blocks

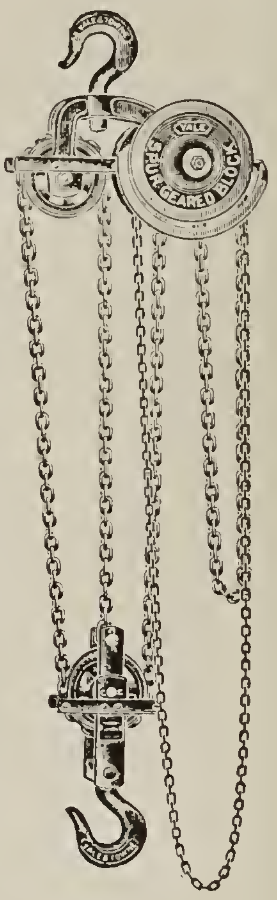
Triplex
¼ to 20 Tons



½-1 Ton



3-4 Ton



5-10 Ton

The Yale Spur-geared Block is the safest and speediest portable hand hoist where loads must be lifted frequently.

Rugged, all steel suspension parts carry the load. It holds the load and will not lower it until the hand chain is pulled. This means safety to the user.

It is highly efficient, one man pulling 82 pounds only on the hand chain, easily and quickly lifts a load of one ton.

Every Yale Chain Block must pass a final test of 3360 pounds for each rated ton or 50 per cent overload in long tons.

Rated Cap. Tons	*Std. Lift in Ft.	Test Load in Long Tons	Min. Distance Between Hooks In.	†Chain Pull		Ship. Wt. Lbs.	Complete Std. Lift Price Each	‡Extra Lift Price per Foot
				Lbs.	Ft.			
¼	8	⅜	13	50	12½	76	$70.00	$1.80
**½	8	¾	13	62	21	76	70.00	1.80
1	8	1½	16	82	31	115	90.00	1.90
1½	8	2¼	18	110	35	160	120.00	2.00
2	9	3	21	120	42	248	140.00	2.10
3	10	4½	32	114	70	256	180.00	3.00
4	10	6	37	124	84	356	220.00	3.20
5	12	7½	45	110	126	482	280.00	4.30
6	12	9	46	130	126	482	330.00	4.30
8	12	12	49	135	168	576	400.00	5.40
10	12	15	54	140	210	700	480.00	6.50
12	12	18	54	130	126	1100	600.00	8.60
16	12	24	62	135	168	1325	720.00	10.80
20	12	30	70	140	210	1675	850.00	13.00

Prices and particulars of 32 and 40-ton blocks on request.

*Figures denote height in feet which blocks with regular length of chain will lift above level on which operator stands.

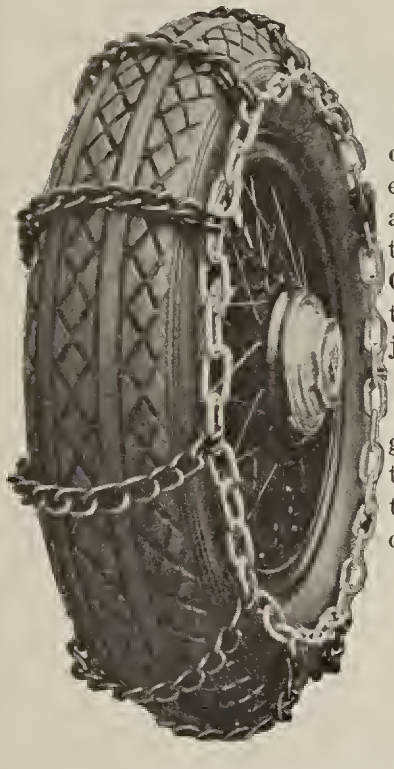
†Figures denote the pull in pounds required to lift the full load, and the number of feet of hand chain which must be overhauled to lift the load one foot.

‡Extra lift per foot includes sufficient hand and load chain to increase the travel of the lower hook one foot.

**A ½-ton special Quick Speed Spur-geared Block can be furnished which is the same as the 1-ton regular with the exception that the gear ratio has been changed to double the speed at half load. Price is $90.00 each.

Write For Our Latest Discount Sheet Showing Net Prices On Above.

HEAVY DUTY CHAINS



These chains are made of heavy gauge steel with each link fire welded. They are built for instant traction and heavy service. Can be placed on truck tires without the aid of a jack.

Are made for truck single pneumatic and dual tires, single and dual solid tires, also for single and duel tractor solid tires.

SINGLE PNEUMATIC TIRE CHAINS

For Tires Marked	Price Per Pair	For Tires Marked	Price Per Pair
32x4	$ 9.00	37x5	$11.25
33x4	9.00	31x5.25	11.25
34x4	9.00	32x6	11.75
35x4	9.00	36x6	13.50
32x4½	9.50	38x6	14.00
33x4½	10.00	34x7	18.00
34x4½	10.00	36x7	22.00
35x4½	10.00	38x7	20.00
36x4½	10.00	40x7	22.00
30x5	9.50	36x8	19.50
32x5	9.50	38x8	21.00
33x5	10.75	40x8	22.00
34x5	10.75	42x9	24.00
35x5	11.25	38x9	23.50
36x5	11.25	44x10	33.00

DUAL PNEUMATIC TIRE CHAINS

For Tires Marked	Price Per Pair	For Tires Marked	Price Per Pair
30x5	$18.50	36x5	$25.00
33x5	19.50	34x7	28.00
34x5	20.00	38x7	30.00
35x5	21.00	36x8	31.00
36x5	21.50	40x8	33.00
32x6	23.00	38x9	35.00

SINGLE SOLID TIRE CHAINS

For Tires Marked	Price Per Pair	For Tires Marked	Price Per Pair
32x4	$10.25	32x4½	$11.00
34x4	10.50	34x4½	11.00
36x4	11.25	36x4½	12.25
34x5	$16.75	36x8	$23.50
36x5	17.20	38x8	25.00
38x5	17.50	40x8	26.75
40x5	17.50	34x10	24.50
34x6	17.75	36x10	24.00
36x6	19.50	38x10	27.00
38x6	19.95	40x10	28.50
40x6	21.00	36x12	27.50
34x7	22.45	38x12	27.75
36x7	20.50	40x12	26.50
38x7	22.00	40x14	29.25
34x8	23.50		

DUAL SOLID TIRE CHAINS

For Tires Marked	Price Per Pair	For Tires Marked	Price Per Pair
36x3	$16.00	36x5	$24.00
34x3½	18.00	38x5	25.50
36x3½	18.75	40x5	25.50
34x4	18.95	36x6	25.50
36x4	19.75	40x6	27.00
38x4	22.00	40x7	30.00
40x4	22.00		

SINGLE SOLID TRACTOR CHAINS

Cross Chain Every 4th Link

For Tires Marked	Price Per Pair	For Tires Marked	Price Per Pair
24x3½	$10.50	40x7	23.00
40x5	18.50	40x8	24.00
40x6	22.50	40x10	25.00

SINGLE SOLID TRACTOR CHAINS

Cross Chain Every 2nd Link

For Tires Marked	Price Per Pair	For Tires Marked	Price Per Pair
24x3½	$15.00	40x7	$34.00
40x5	26.00	40x8	38.00
40x6	33.00	40x10	40.00

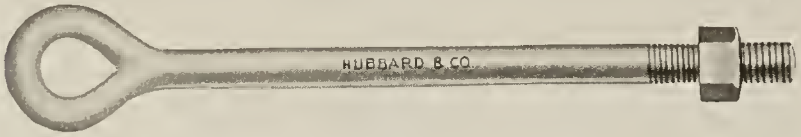
DUAL SOLID TRACTOR CHAINS

Cross Chain Every 4th Link		Cross Chain Every 2nd Link	
For Tires Marked	Price Per Pair	For Tires Marked	Price Per Pair
40x5	$25.00	40x5	$41.00

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

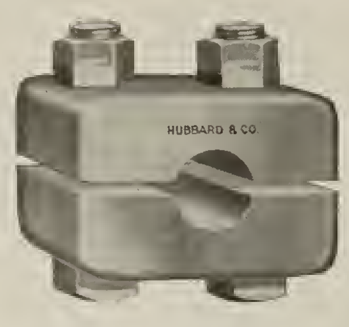
DOUBLE GALVANIZED GUARD RAIL FITTINGS

Guaranteed to Meet State Specifications



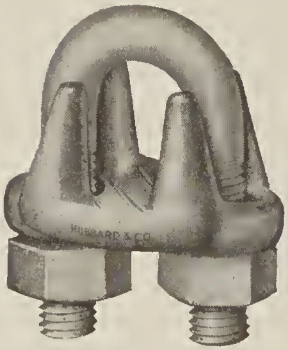
DROP FORGED EYE BOLT

¾ Inch No.	1 Inch No.	Length to Center of eye Inches	Thread Length Inches
5514	5524	8	5
5515	5525	12	6
5516	5526	24	18
5517	5527	48	6
5518	5528	48	12
5519	5529	60	3¾
5520	5530	72	3¾



DROP FORGED POST CLAMP

No. 5500 for ¾ inch cable.

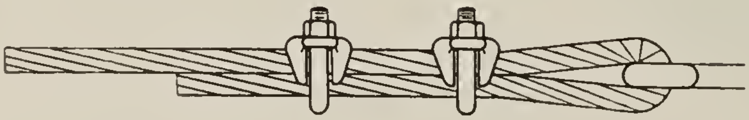


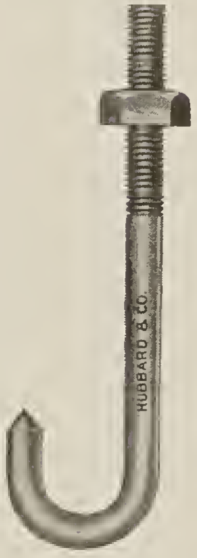
No. 7484

DROP FORGED WIRE ROPE CLIPS

Hot Double Galvanized

Stock No.	Size of Wire, Inches
7486	¾
7488	1





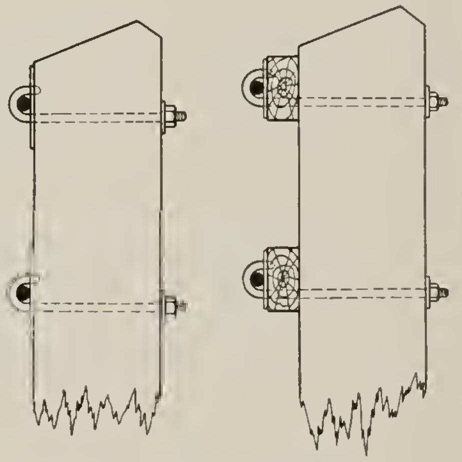
CABLE RETAINER BOLT AND PLATE

Bolt

No.	Diam. Ins.	Length Ins.	Thread Ins.
5507	½	10	4
5508	⅝	12	4

Plate

No.	Size of Plate Inches	Bolt Size Inches
5509	3x3¼	½
5510	3x3¼	⅝



Showing Bolt and Plate in Place on Post

No. 7817

No. 5502

No. 5501

No. 5503

POST AND BEARING PLATES

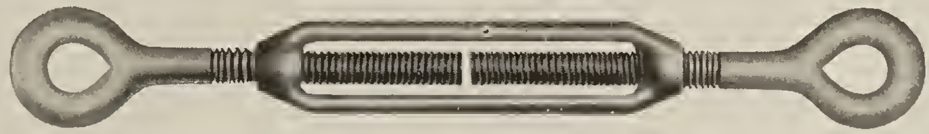
Hot Galvanized

For ¾ Inch Rods

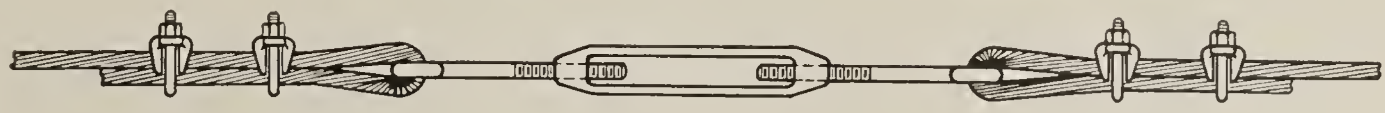
No.	Size Inches	Holes
7817	3x3¼	1
5501	3x6¼	1
5506	3x6¼	2
5508	3x4¼	1

For 1 Inch Rods

No.	Size Inches	Holes
7820	4x4½	1
5504	2x6¼	1
5505	2x6¼	2
5506	2x4¼	1

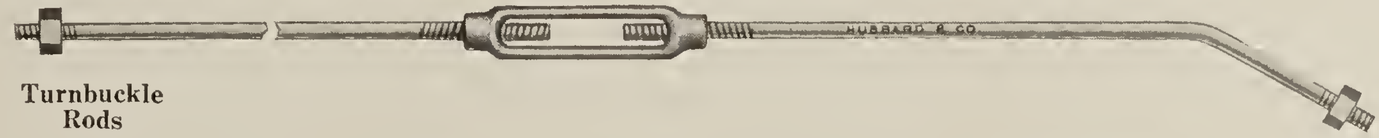


DROP FORGED TURN BUCKLE No. 8610



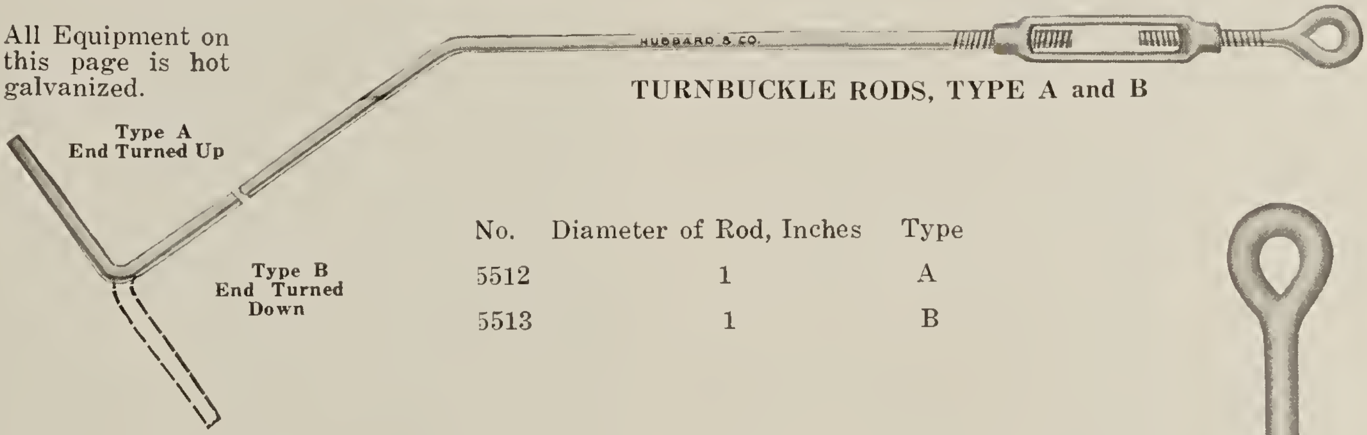
Turnbuckle Installation

No.	Diameter of Bolt Inches	Length of Opening, Ins.	Type of Assembly
8610	¾	12	Eye and Eye
8616	1	12	Eye and Eye



Turnbuckle Rods

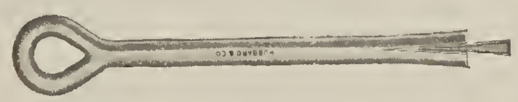
All Equipment on this page is hot galvanized.


HUBBARD & CO.
Type A End Turned Up
Type B End Turned Down

TURNBUCKLE RODS, TYPE A and B

No.	Diameter of Rod, Inches	Type
5512	1	A
5513	1	B

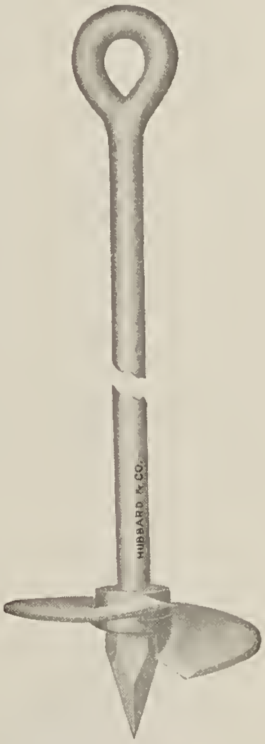
ROCK GUY BOLT WITH WEDGE



No.	Length Ins.	Dia-Ins.
7547	18	1

STEELWING ANCHOR

	Diameter Inches		
No.	Rod	Wing	Length Ft.
7526	¾	6	5½
7528	1	8	5½



Steelwing Anchor

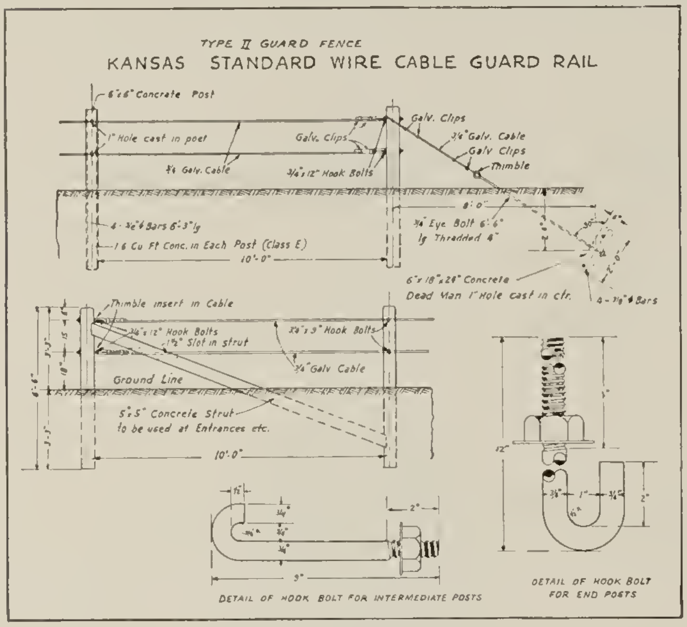
Machine Bolt

We have a complete line of Galvanized Machine Bolts, Carriage Bolts, Washers, Lug Screws and anything you need. Write for a quotation.

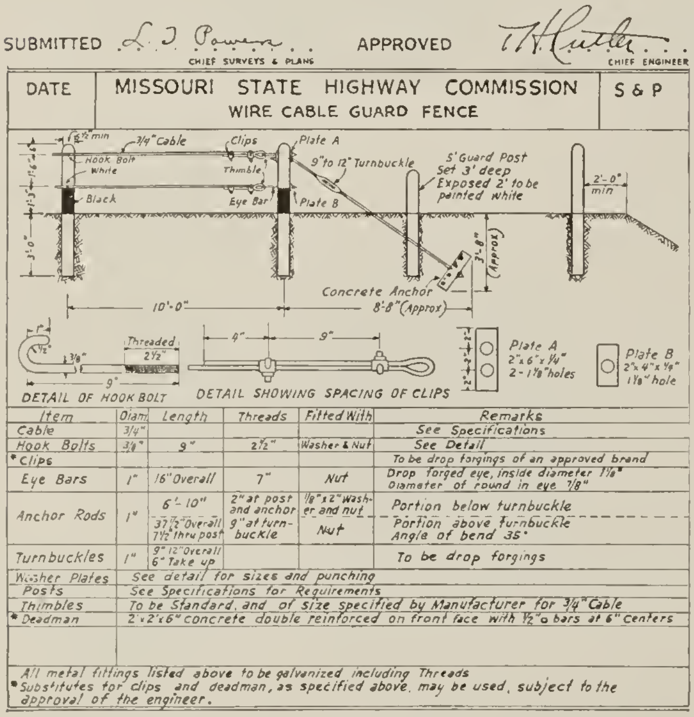
Carriage Bolts

Round Washer

DOUBLE GALVANIZED GUARD RAIL FITTINGS
To Meet State Specifications


TYPE II GUARD FENCE
KANSAS STANDARD WIRE CABLE GUARD RAIL
6"x6" Concrete Post
1" Hole cast in post
¾ Galv. Cable
Galv. Clips
¾"x12" Hook Bolts
Galv. Clips
¾" Galv. Cable
Galv Clips
Thimble
4 - ½"φ Bars 6'-3" lg
1.6 Cu Ft Conc. in Each Post (Class E)
10'-0"
8'-0"
¾" Eye Bolt 6'-6" lg Threaded 4"
6"x18"x24" Concrete Dead Man 1" Hole cast in ctr.
4 - ½"φ Bars
Thimble insert in Cable
¾"x12" Hook Bolts
1½" Slot in strut
¾"x9" Hook Bolts
¾" Galv Cable
Ground Line
5"x5" Concrete Strut to be used at Entrances etc.
10'-0"
9"
2"
12"
DETAIL OF HOOK BOLT FOR INTERMEDIATE POSTS
DETAIL OF HOOK BOLT FOR END POSTS

Kansas Specifications


½" min
¾" Cable
Clips
Plate A
Hook Bolt
White
Thimble
9" to 12" Turnbuckle
5' Guard Post Set 3' deep Exposed 2' to be painted white
2'-0" min
Black
Eye Bar
Plate B
3'-0"
3'-8" (Approx)
Concrete Anchor
10'-0"
8'-8" (Approx)
Threaded 2½"
9"
4"
9"
DETAIL OF HOOK BOLT
DETAIL SHOWING SPACING OF CLIPS
Plate A 2"x6"x¼" 2 - 1⅛" holes
Plate B 2"x4"x¼" 1⅛" hole

SUBMITTED L. J. Powers . . .
CHIEF SURVEYS & PLANS

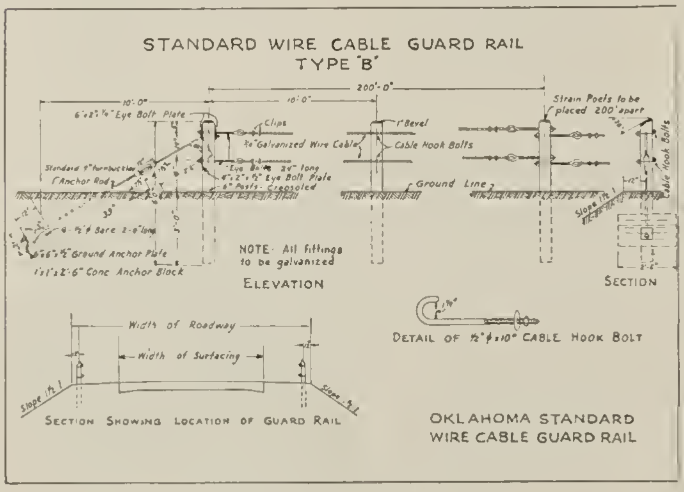
APPROVED T. H. Cutler . . .
CHIEF ENGINEER

DATE	MISSOURI STATE HIGHWAY COMMISSION WIRE CABLE GUARD FENCE	S & P

Item	Diam	Length	Threads	Fitted With	Remarks
Cable	¾"				See Specifications
Hook Bolts	⅜"	9"	2½"	Washer & Nut	See Detail
* Clips					To be drop forgings of an approved brand
Eye Bars	1"	16" Overall	7"	Nut	Drop forged eye, inside diameter 1⅛" Diameter of round in eye ⅞"
Anchor Rods	1"	6'-10"	2" at post and anchor	⅛"x2" washer and nut	Portion below turnbuckle
		37½" Overall 7½" thru post	9" at turnbuckle	Nut	Portion above turnbuckle Angle of bend 35°
Turnbuckles	1"	9" 12" Overall 6" Take up			To be drop forgings
Washer Plates	See detail for sizes and punching				
Posts	See Specifications for Requirements				
Thimbles	To be Standard, and of size specified by Manufacturer for ¾" Cable				
* Deadman	2'x2'x6" concrete double reinforced on front face with ½"φ bars at 6" centers				

All metal fittings listed above to be galvanized including Threads
* Substitutes for clips and deadman, as specified above, may be used, subject to the approval of the engineer.

Missouri Specifications


STANDARD WIRE CABLE GUARD RAIL
TYPE "B"
200'-0"
10'-0"
10'-0"
6"x2"x½" Eye Bolt Plate
Clips
½" Galvanized Wire Cable
1" Bevel
Cable Hook Bolts
Strain Posts to be placed 200' apart
Standard 9" Turnbuckles
Anchor Rod
Eye Bolts 24" long
4"x2"x½" Eye Bolt Plate
6" Posts - Creosoted
Ground Line
35°
4 - ½"φ Bars 2'-6" long
6"x6"x½" Ground Anchor Plate
1'x1'x2'-6" Conc Anchor Block
NOTE: All fittings to be galvanized
ELEVATION
Slope 1½:1
Cable Hook Bolts
SECTION
Width of Roadway
Width of Surfacing
Slope 1½:1
Slope 1½:1
SECTION SHOWING LOCATION OF GUARD RAIL
DETAIL OF ½"φx10" CABLE HOOK BOLT
OKLAHOMA STANDARD WIRE CABLE GUARD RAIL

Oklahoma Specifications

KANSAS WIRE CABLE GUARD RAIL SPECIFICATIONS

Hook bolts	—¾″x 9″	with nuts and washers
Hook bolts	—¾″x12″	with nuts and washers
Hook bolts	—½″x 8″	threaded 3″ with nuts and washers
Eye bolts	—¾″x6′6″	threaded 4″ with nuts and washers.
Eye bolts	—¾″x24″	threaded 18″ with nuts and washers.
Eye bolts	—¾″x12″	threaded 6″ with nuts and washers.

MISSOURI SPECIFICATIONS

Hook bolts—⅜″x9″—2½″ thread with nuts and washers.

Eye bars—1″x16″—7″ thread with nuts and washers.

Anchor rods—1″x6′10″—2″ thread one end, 9″ thread other end

Anchor rods—1″x37½″—2″ thread one end, 10″ thread other end with nuts and washers.

Turnbuckles—1″x12″ overall, 6″ takeup (this is the standard 9″ turnbuckle).

Washer plate—2″x6″x¼″ as per plate "A" with two holes 1⅛″ diameter.
1⅛″ diameter.

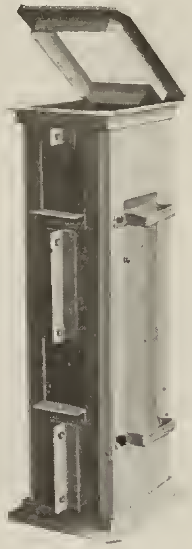
Washer plate—2″x4″x¼″ same as plate "B" with one hole

OKLAHOMA WIRE GUARD RAIL SPECIFICATIONS

Hook bolts— ½″x10″ with nuts and washers.
Eye bolts—1 ″x24″ threaded 22″ with nuts and washers.
Eye bolts—1 ″x 8″ threaded 3″ with nuts and washers.
Eye bolts—1 ″x12″ threaded 6″ with nuts and washers.
Anchor rods—1″x39″ threaded both ends nuts and washers.
Anchor rods—1″x30″ threaded both ends nuts and washers.
Turnbuckles—1″x12″ overall (this is a standard 9″ turnbuckle).
Eye bolt plates 6″x2″x¼″ with two holes 1⅛″ diameter.
Eye bolt plates 4″x2″x½″ with one hole 1⅛″ diameter.
Ground anchor plate 6″x6″x½″ one hole 1⅛″ diameter.

All of the above pieces, covered by the different state specifications to be galvanized. It is our understanding that this should be double galvanized. In regard to galvanizing, the Missouri State Specifications cover the following:

> Tensile strength of fittings 15,000 pounds; to have continuous coating of zinc galvanizing of uniform thickness applied at the rate of, at least, one ounce per square foot of surface.

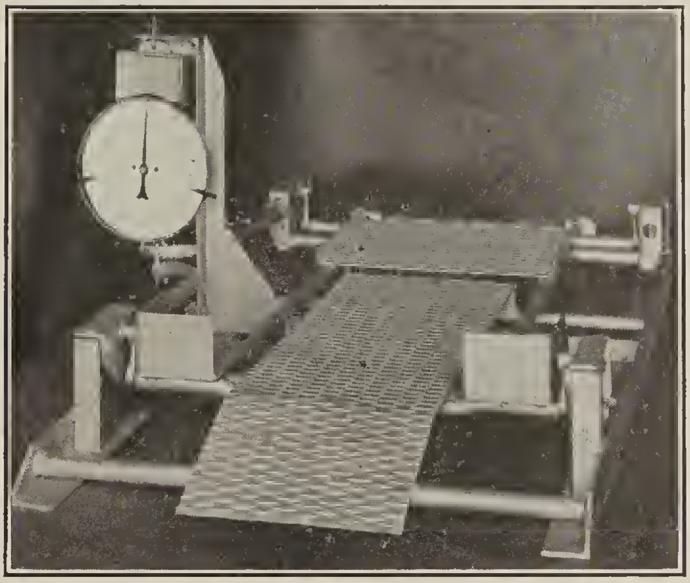


STEEL FORMS FOR CONCRETE BRIDGE RAILS

Guaranteed to Meet State Specifications

Eclipse Forms are built to use in making concrete rails on bridges. These steel forms have been adopted by state highway commissions and are recognized as the best money-saver for the bridge contractor. The rails are cast first in special rail forms. They are then placed in the post forms which are cast in place on the bridge. Our recommendation is that you have five intermediate post forms and two corner post forms. Twelve or fifteen rail forms will make enough to allow you to cast all of the rails required. Prices on these steel forms will be furnished upon request and we guarantee them to meet the state specifications.

NORRIS WHEELBARROW SCALES



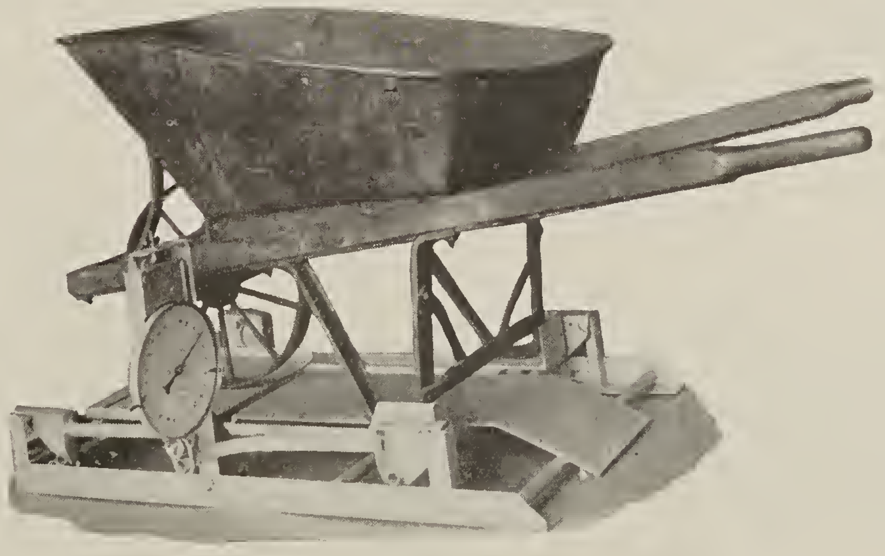
The Norris Wheelbarrow Scale was built to meet the requirements of weighing the materials in concrete and will accomplish the same thing as the expensive skip scales. One or two of these scales should be placed on the job, located near the stock piles.

Norris scale weight patching will enable you to save on materials over the volume patching, as there is no shrinkage which requires extra cement. Sand and rock will always weigh out the same but will not always equal the same volume.

These scales are the knife edge lever arm type, and are accurate to plus or minus one percent. There is nothing to get out of adjustment and they will continue to function perfectly job after job. They will fit any standard make wheelbarrow. The dial scale itself is equipped with two clips which can be set anywhere to indicate the proper weight of a load of sand or rock. Two of these scales set beside the stock pile will speed up loading and insure accuracy.

The Norris scale is built entirely of steel welded together and weighs only seventy pounds. The platform itself is only the three points occupied by the wheel and legs of the wheelbarrow. The man pushing the wheelbarrow can step over and not rest his weight on the scale.

For accurate patching and at a small investment, we recommend our Norris Wheelbarrow Scale.



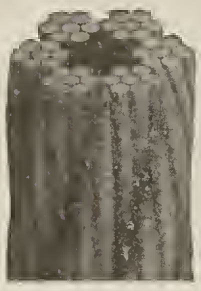
AMERICAN WIRE ROPE

Made by American Steel & Wire Company

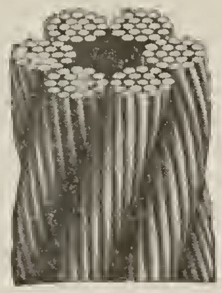
Subsidiary of United States Steel Corporation

Complete Illustrated Catalog on Request

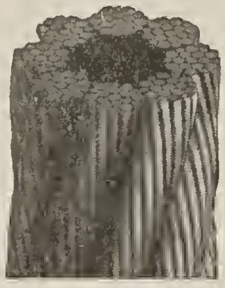
*Discounts from these list prices will be quoted



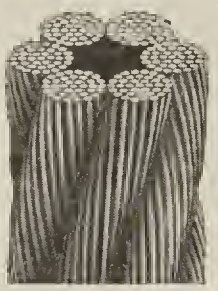
TRANSMISSION HAULAGE OR STANDING ROPE
6 STRANDS
7 WIRES
1 HEMP CORE



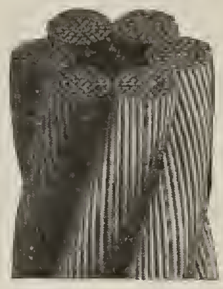
STANDARD HOISTING ROPE
6 STRANDS
19 WIRES
1 HEMP CORE



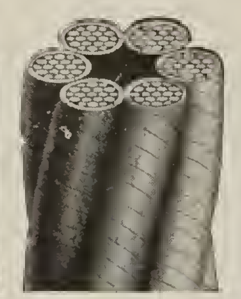
Extra FLEXIBLE HOISTING ROPE
8 STRANDS
19 WIRES
1 HEMP CORE



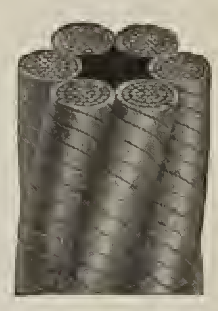
SPECIAL FLEXIBLE HOISTING ROPE
6 STRANDS
37 WIRES
1 HEMP CORE



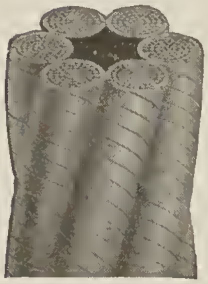
EXTRA SPECIAL FLEXIBLE HOISTING ROPE
6 STRANDS
61 WIRES
1 HEMP CORE



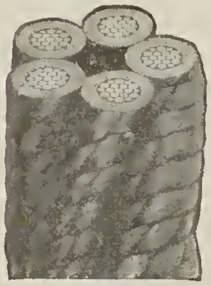
STEEL CLAD HOISTING ROPE
6 STRANDS
19 WIRES
1 HEMP CORE



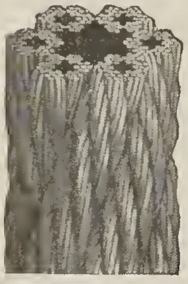
STEEL CLAD SPECIAL FLEXIBLE HOISTING ROPE
6 STRANDS
37 WIRES
1 HEMP CORE



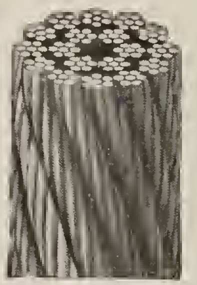
STEEL CLAD EXTRA SPECIAL FLEXIBLE HOISTING ROPE
6 STRANDS
61 WIRES
1 HEMP CORE



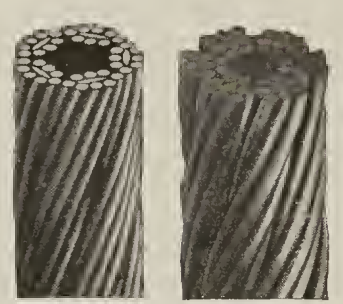
MARLIN CLAD ROPE
5 STRANDS
19 WIRES
1 HEMP CORE



TILLER or HAND ROPE
6 STRANDS
42 WIRES EACH
(252 WIRES)
7 HEMP CORES



NON SPINNING HOISTING ROPE
18 STRANDS
7 WIRES
1 HEMP CORE



FLATTENED STRAND HAULAGE OR TRANSMISSION ROPE

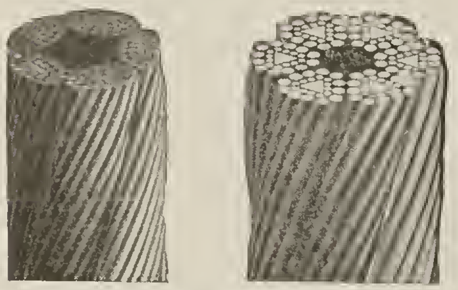
TYPE C
5 STRANDS
9 WIRES
1 HEMP CORE

TYPE D
6 STRANDS
8 WIRES
1 HEMP CORE

Galvanized Iron and Steel Rope

for Standing, Rigging, Deep Sea Towing, Guy, Mooring Lines and Suspension Bridges

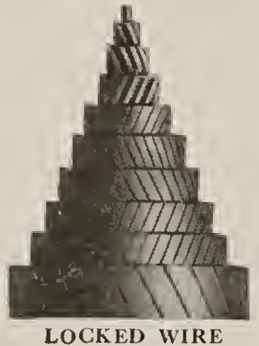
(See Catalogue for Illustrations and Data)



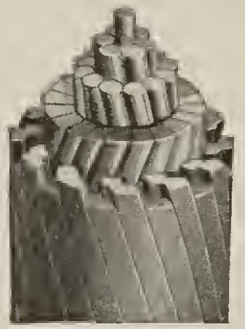
FLATTENED STRAND HOISTING ROPE

TYPE A
5 STRANDS
28 WIRES
1 HEMP CORE

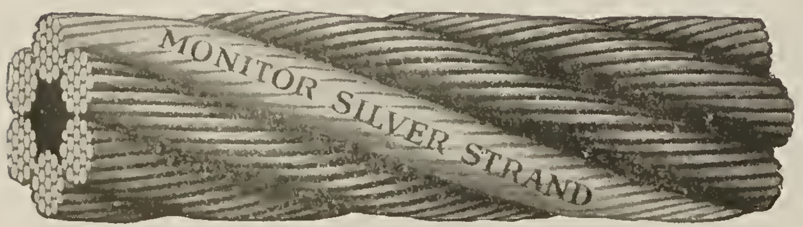
TYPE B
6 STRANDS
25 WIRES
1 HEMP CORE



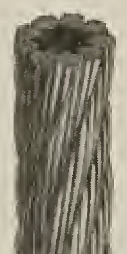
LOCKED WIRE CABLE



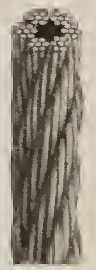
LOCKED COIL TRACK CABLE



6 STRANDS, 19 WIRES, 1 HEMP CORE

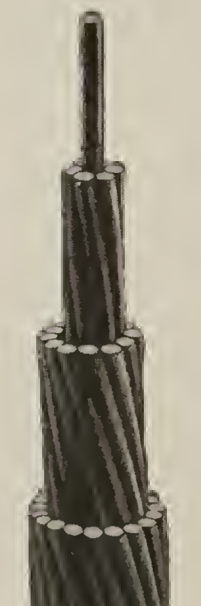


GALV'D MAST ARM OR ARC LIGHT ROPE



SASH CORD
6 STRANDS
7 WIRES
1 COTTON CORE

STEEL STRAND
7 or 19 WIRES



TRAMWAY CABLE
1, 7, 19 or 37 WIRES

List Prices and Specifications of American Wire Rope

Transmission, Haulage or Standing Rope

1 Iron

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0 51	1½	4¾	3 38	29 7	See Handbook	See Handbook
43	1⅜	4¼	2 84	25 2		
.36	1¼	4	2 34	21.		
.30	1⅛	3½	1 90	17 2		
.24	1	3	1 50	13 7		
18½	⅞	2¾	1 15	10.5		
14	¾	2¼	.84	7.86		
10	⅝	2	.59	6 52		
08¼	9/16	1¾	.48	4 49		
.06½	½	1½	.38	3 57		
.05½	7/16	1¼	.29	2 76		
.04½	⅜	1⅛	.21	2 05		
.03¾	5/16	1	.15	1 43		
03¼	9/32	⅞	.12	1 17		

2 Cast Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0 60	1½	4¾	3 38	62 5	See Handbook	See Handbook
.51	1⅜	4¼	2 84	53.		
43	1¼	4	2 34	44 5		
.36	1⅛	3½	1 90	36 4		
.29	1	3	1 50	29		
.23	⅞	2¾	1 15	22 4		
18½	¾	2¼	.84	16 5		
.13½	⅝	2	59	11 5		
.11½	9/16	1¾	.48	9 4		
.09	½	1½	.38	7 5		
.07	7/16	1¼	29	5.8		
.05¾	⅜	1⅛	.21	4 3		
.04½	5/16	1	15	3.1		
.04¼	9/32	⅞	12	2 52		
.04	¼	¾	094	2.		

3 Extron Cast Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0 75	1½	4¾	3 38	68 7	See Handbook	See Handbook
.64	1⅜	4¼	2 84	58 2		
.53	1¼	4	2.34	48 7		
.44	1⅛	3½	1 90	40		
.35	1	3	1 50	31 9		
.27	⅞	2¾	1 15	24 6		
.22	¾	2¼	.84	18 1		
.16	⅝	2	.59	12.6		
.13¾	9/16	1¾	.48	10.3		
.10½	½	1½	.38	8 2		
.08½	7/16	1¼	.29	6.3		
.06¾	⅜	1⅛	.21	4 7		
.05½	5/16	1	.15	3 35		
.05¼	9/32	⅞	.12	2 72		
.05	¼	¾	094	2.15		

4 Plow Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0 90	1½	4¾	3 38	75	See Handbook	See Handbook
.76	1⅝	4¼	2 84	63 5		
.62	1¼	4	2 34	63.		
.51	1⅛	3½	1 90	43 6		
.41	1	3	1 50	34.8		
.32½	⅞	2¾	1 15	26 8		
.26	¾	2¼	.84	19 8		
.19	⅝	2	.59	13.8		
.16¼	9/16	1¾	.48	11 3		
.12½	½	1½	.38	9		
.10½	7/16	1¼	.29	6 9		
.08	⅝	1⅛	.21	6 15		
.06½	5/16	1	15	3.65		
.06¼	9/32	⅞	.12	2.95		
.06	¼	¾	094	2.35		

5 Monitor Silver Strand Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$1 05	1½	4¾	3.38	86.5	See Handbook	See Handbook
.88	1⅜	4¼	2.84	73.5		
.72	1¼	4	2.34	61.		
.58	1⅛	3½	1.90	50.		
.48	1	3	1 50	40.		
.37	⅞	2¾	1.15	30 8		
.28½	¾	2¼	.84	22 8		
.20½	⅝	2	.59	16.		
.17	9/16	1¾	48	13.		
.13½	½	1½	.38	10 3		
.11½	7/16	1¼	.29	7.9		
.08¾	⅜	1⅛	21	6 9		
.08¼	5/16	1	15	4 2		
.07½	9/32	⅞	.12	3 4		
.07	¼	¾	094	2 7		

Standard Hoisting Rope

6 Iron

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$1.70	2¾	8⅝	12 10	96.	See Handbook	See Handbook
1.40	2½	7⅞	10	79 1		
1 17	2¼	7⅛	8 10	64 8		
.95	2	6¼	6 40	51 8		
88	1⅞	5¾	5 63	45 8		

Ropes made with wire strand center add 10% to list prices. Ropes made with Independent Wire Rope Center (any construction) add 15% to list prices.

Intermediate sizes take the list price for the next larger size.

Standard Hoisting Rope

6 Iron—Continued

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0.80	1¾	5½	4 90	40 1	See Handbook	See Handbook
.65	1⅝	5	4 23	34.8		
.57	1½	4¾	3.60	29.7		
.49	1⅜	4¼	3 03	25 2		
.40	1¼	4	2 50	21.		
.33	1⅛	3½	2 03	17.2		
.26	1	3	1 60	13 7		
.21	⅞	2¾	1.23	10 6		
17	¾	2¼	.90	7 86		
13½	⅝	2	.63	5.52		
.11½	9/16	1¾	.51	4 49		
.09½	½	1½	.40	3 57		
.08½	7/16	1¼	.31	2 76		
.07½	⅜	1⅛	.23	2 05		
06¾	5/16	1	.16	1 43		
06½	¼	¾	10	97		

6A Iron Elevator Rope

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0 26	1	3	1 60	13.7	See Handbook	See Handbook
.21	⅞	2¾	1.23	10 6		
.17	¾	2¼	.90	7.86		
.13½	⅝	2	63	5 52		
.11½	9/16	1¾	51	4 49		
09½	½	1½	40	3 57		
.08½	7/16	1¼	.31	2 76		
07½	⅜	1⅛	23	2 05		

7 Traction Steel Elevator Rope

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0.31	1	3	1 60	28 5	See Handbook	See Handbook
.25	⅞	2¾	1.23	22 0		
.20½	¾	2¼	.90	16 25		
.15¾	⅝	2	.63	11 5		
.13¾	9/16	1¾	.51	9 25		
.12	½	1½	.40	7 5		
10½	7/16	1¼	31	5 75		
09½	⅜	1⅛	23	4 4		

8 Cast Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$2.10	2¾	8⅝	12 10	212	See Handbook	See Handbook
1.75	2½	7⅞	10	176.		
1.44	2¼	7⅛	8 10	144.		
1.16	2	6¼	6.40	114.		
1.02	1⅞	5¾	5 63	100.		
.90	1¾	5½	4 90	88.		
.77	1⅝	6	4 23	76.		
.66	1½	4¾	3 60	65.		
.56	1⅝	4¼	3 03	55		
.46	1¼	4	2 50	46		
.38	1⅛	3½	2 03	37		
31	1	3	1 60	29 5		
.25	⅞	2¾	1 23	22 8		
.20½	¾	2¼	.90	16 8		
15¾	⅝	2	.63	11 8		
.13¾	9/16	1¾	51	9 6		
.12	½	1½	40	7.7		
10½	7/16	1¼	.31	6.		
09½	⅜	1⅛	23	4.5		
.09¼	5/16	1	16	3 2		
09	¼	¾	10	2.1		

9 Extron Cast Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$2.55	2¾	8⅝	12 10	234	See Handbook	See Handbook
2.10	2½	7⅞	10	195.		
1 70	2¼	7⅛	8 10	160.		
1 34	2	6¼	6 40	127		
1.25	1⅞	5¾	5 63	112		
1.10	1¾	5½	4.90	98.		
.94	1⅝	5	4.23	85		
.80	1½	4¾	3 60	72 5		
.68	1⅜	4¼	3 03	61.5		
.56	1¼	4	2 50	51		
.46	1⅛	3½	2 03	41.5		
.37	1	3	1 60	33		
.29	⅞	2¾	1.23	25 4		
.24	¾	2¼	.90	18.7		
.18	⅝	2	63	13 1		
15¾	9/16	1¾	.51	10 6		
.13¾	½	1½	.40	8 5		
.12	7/16	1¼	.31	6.6		
11	⅜	1⅛	.23	5		
10¾	5/16	1	16	3.5		
10½	¼	¾	10	2 3		

10 Plow Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$3.00	2¾	8⅝	12.10	256.	See Handbook	See Handbook
2 60	2½	7⅞	10	214.		
2.00	2¼	7⅛	8 10	176.		
1.58	2	6¼	6 40	140.		
1 46	1⅞	5¾	5 63	123.		
1 30	1¾	5½	4.90	108.		
1 08	1⅝	5	4.23	94		
.93	1½	4¾	3.60	80.5		
.79	1⅜	4¼	3 03	68		
.65	1¼	4	2 50	56 5		
.54	1⅛	3½	2 03	46		
43	1	3	1 60	36.5		
.34½	⅞	2¾	1 23	28..		
28	¾	2¼	90	20.6		

Standard Hoisting Rope

10 Plow Steel—Continued

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0 21	⅝	2	.63	14.4	See Handbook	See Handbook
.18¼	9/16	1¾	.51	11 7		
.16	½	1½	.40	9 4		
.14	7/16	1¼	.31	7 3		
.13	⅜	1⅛	.23	5 5		
12¼	5/16	1	.16	3 9		
.12	¼	¾	10	2 5		

11 Monitor Silver Strand Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$3 45	2¾	8⅝	12 10	294.	See Handbook	See Handbook
2.80	2½	7⅞	10	246.		
2 50	2¼	7⅛	8 10	202.		
1.85	2	6¼	6 40	161.		
1 75	1⅞	5¾	5 63	142		
1.60	1¾	5½	4 90	124		
1.30	1⅝	5	4 23	108.		
1 10	1½	4¾	3.60	92 5		
.90	1⅜	4¼	3 03	78 5		
75	1¼	4	2 50	65		
.62	1⅛	3½	2 03	53		
.50	1	3	1 60	42		
.39	⅞	2¾	1 23	32 2		
.31	¾	2¼	.90	23 7		
22½	⅝	2	63	16 6		
.19	9/16	1¾	.51	13 5		
17	½	1½	.40	10 8		
15½	7/16	1¼	.31	8 4		
14½	⅜	1⅛	23	6 3		
.13½	5/16	1	16	4 5		
.13	¼	¾	10	2 9		

American Special Hoisting Rope

11A Type P Plow Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$3.15	2¾	8⅝	11 72	248	See Handbook	See Handbook
2 62½	2½	7⅞	9 69	206.		
2 10	2¼	7⅛	7.85	168		
1 69	2	6¼	6 20	135		
1 55½	1⅞	5¾	5 45	119		
1.40	1¾	5½	4 75	104		
1 165	1⅝	5	4 09	89 8		
1 04	1½	4¾	3.49	76 7		
.86	1⅜	4¼	2 93	64 6		
.71½	1¼	4	2 42	53 5		
60	1⅛	3½	1.96	43 5		
.47¾	1	3	1.55	34 4		
.38¾	⅞	2¾	1 19	26 5		
.31	¾	2¼	87	19 8		
23	⅝	2	.61	14		
.20⅜	9/16	1¾	.49	11 5		
17½	½	1½	.39	9 20		
16	7/16	1¼	.30	7 2		
15	⅜	1⅛	.22	5 3		

11B Type P Monitor Silver Strand Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$3 60	2¾	8⅝	11 72	285.	See Handbook	See Handbook
2 98	2½	7⅞	9 69	237		
2 62½	2¼	7⅛	7.85	194.		
1 98	2	6¼	6 20	155.		
1 82½	1⅞	5¾	5 46	137		
1.68	1¾	5½	4 75	119 5		
1.37½	1⅝	5	4 09	103.3		
1 17½	1½	4¾	3 49	88 2		
97½	1⅜	4¼	2 93	74 3		
.80½	1¼	4	2 42	61.5		
.68½	1⅛	3½	1 96	49 9		
54½	1	3	1.55	39.5		
.42½	⅞	2¾	1.19	30 5		
.33½	¾	2¼	.87	22.8		
.24¾	⅝	2	61	16 1		
.21	9/16	1¾	49	13.2		
18½	½	1½	.39	10 6		
.17	7/16	1¼	.30	8 3		
16	⅜	1⅛	22	6 1		

11C Type R Plow Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$3 30	2¾	8⅝	11 72	248.	See Handbook	See Handbook
2 75	2½	7⅞	9 69	206		
2 20	2¼	7⅛	7.85	168.		
1 80	2	6¼	6 20	135		
1 65	1⅞	5¾	5 45	119.		
1.50	1¾	5½	4 75	104		
1 25	1⅝	5	4 09	89 8		
1 15	1½	4¾	3 49	76 7		
.93	1⅜	4¼	2 93	64 6		
78	1¼	4	2 42	53 5		
.66	1⅛	3½	1 96	43 5		
.52½	1	3	1 65	34.4		
.43	⅞	2¾	1 19	26 5		
.34	¾	2¼	.87	19.8		
.26	⅝	2	.61	14		
.22½	9/16	1¾	.49	11 5		
.19	½	1½	.39	9 2		
17¾	7/16	1¼	.30	7 2		
17	⅝	1⅛	22	5 3		

American Special Hoisting Rope

11D Type R Monitor Silver Strand Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$3.75	2¾	8⅝	11.72	285.	See Handbook	See Handbook
3.15	2½	7⅞	9.69	237.		
2.75	2¼	7⅛	7.85	194.		
2.10	2	6¼	6.20	155.		
1.90	1⅞	5¾	5.45	137.		
1.75	1¾	5½	4.75	119.5		
1.45	1⅝	5	4.09	103.3		
1.25	1½	4¾	3.49	88.2		
1.05	1⅜	4¼	2.93	74.3		
.86	1¼	4	2.42	61.5		
.75	1⅛	3½	1.96	49.9		
.59	1	3	1.55	39.5		
46	⅞	2¾	1.19	30.5		
36	¾	2¼	.87	22.8		
.27	⅝	2	.61	16.1		
.23	9/16	1¾	49	13.2		
20	½	1½	.39	10.6		
18½	7/16	1¼	.30	8.3		
17½	⅜	1⅛	22	6.1		

Extra Flexible Hoisting Rope

12 Iron

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0.29	1	3	1.45	12.2	See Handbook	See Handbook
.23	⅞	2¾	1.11	9.4		
.19½	¾	2¼	.82	6.95		
15½	⅝	2	.57	4.86		
.13	9/16	1¾	46	4.06		
.11	½	1½	.36	3.28		

13 Cast Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0.73	1½	4¾	3.26	57.5	See Handbook	See Handbook
62	1⅜	4¼	2.74	48.6		
.51	1¼	4	2.27	40.4		
.42	1⅛	3½	1.84	32.8		
.34	1	3	1.45	26		
.28	⅞	2¾	1.11	20		
.23	¾	2¼	.82	14.8		
.17½	⅝	2	.57	10.4		
.15½	9/16	1¾	.46	8.5		
.13½	½	1½	.36	6.8		
.12	7/16	1¼	.28	5.3		
.10½	⅜	1⅛	.20	3.94		
10¼	5/16	1	14	2.79		
10	¼	¾	09	1.79		

13A Extra Flexible Seale Patent Special Steel Traction Elevator Rope

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0.13½	½	1½	36	6.5	See Handbook	See Handbook
.15½	9/16	1¾	.46	8.0		
.17½	⅝	2	.57	10.0		
.23	¾	2¼	.82	14.0		
.28	⅞	2¾	1.11	19.		
.34	1	3	1.45	25		

14 Extron Cast Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0.88	1½	4¾	3.26	63.3	See Handbook	See Handbook
.75	1⅜	4¼	2.74	53.4		
.62	1¼	4	2.27	44.4		
.51	1⅛	3½	1.84	36.		
.41	1	3	1.45	28.6		
.34	⅞	2¾	1.11	22.		
.27¼	¾	2¼	.82	16.3		
20½	⅝	2	.57	11.4		
.18	9/16	1¾	.46	9.4		
.15½	½	1½	.36	7.5		
.14¼	7/16	1¼	.28	5.8		
.12½	⅜	1⅛	.20	4.33		
.12¼	5/16	1	.14	3.07		
.12	¼	¾	.09	1.97		

15 Plow Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$1.06	1½	4¾	3.26	69.	See Handbook	See Handbook
.90	1⅜	4¼	2.74	58.3		
.75	1¼	4	2.27	48.4		
.62	1⅛	3½	1.84	39.4		
.50	1	3	1.45	31.2		
.41	⅞	2¾	1.11	24.		
.32½	¾	2¼	.82	17.8		
.24	⅝	2	.57	12.5		
.21	9/16	1¾	.46	10.3		
.18¼	½	1½	.36	8.2		
.17	7/16	1¼	.28	6.3		
.15	⅜	1⅛	.20	4.7		
.14½	5/16	1	.14	3.34		
.14¼	¼	¾	09	2.15		

16 Monitor Silver Strand Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$1.19	1½	4¾	3.26	79.5	See Handbook	See Handbook
.98	1⅜	4¼	2.74	67		
.82	1¼	4	2.27	55.7		
.68	1⅛	3½	1.84	45.2		
.55	1	3	1.45	35.8		
.43	⅞	2¾	1.11	27.6		
.34	¾	2¼	.82	20.5		
.25	⅝	2	.57	14.4		
.22	9/16	1¾	.46	11.8		
.19	½	1½	.36	9.5		
.17½	7/16	1¼	.28	7.3		
.16½	⅜	1⅛	.20	5.45		
.16	5/16	1	.14	3.85		
.15¾	¼	¾	09	2.47		

Special Flexible Hoisting Rope

17 Cast Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$3.75	3½	11	19.	323.	See Handbook	See Handbook
3.25	3¼	10¼	16.37	281.		
2.75	3	9½	13.95	241.		
2.30	2¾	8⅝	11.72	204.		
1.92	2½	7⅞	9.69	170.		
1.60	2¼	7⅛	7.85	139.		
1.48	2⅛	6¾	7.	125.		
1.35	2	6¼	6.20	111.		
1.20	1⅞	5¾	5.45	98.		
1.05	1¾	5½	4.75	86.		
.89	1⅝	5	4.09	74.3		
79	1½	4¾	3.49	63.5		
.65	1⅜	4¼	2.93	53.5		
.55	1¼	4	2.42	44.3		
.46	1⅛	3½	1.96	36.		
.37	1	3	1.55	28.6		
30	⅞	2¾	1.19	22.		
24	¾	2¼	.87	16.4		
18½	⅝	2	.61	11.6		
16½	9/16	1¾	.49	9.5		
14	½	1½	.39	7.7		
12½	7/16	1¼	.30	6.		
12	⅜	1⅛	.22	4.4		

18 Extron Cast Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$4.60	3½	11	19.	357.	See Handbook	See Handbook
3.95	3¼	10¼	16.37	311.		
3.35	3	9½	13.95	267.		
2.80	2¾	8⅝	11.72	226.		
2.35	2½	7⅞	9.69	188.		
1.90	2¼	7⅛	7.85	153.		
1.70	2⅛	6¾	7.00	138.		
1.55	2	6¼	6.20	123.		
1.40	1⅞	5¾	5.45	108.5		
1.28	1¾	5½	4.75	95.		
1.07	1⅝	5	4.09	82.		
.95	1½	4¾	3.49	70.		
78	1⅜	4¼	2.93	59.		
.65	1¼	4	2.42	48.9		
.55	1⅛	3½	1.96	39.7		
44	1	3	1.55	31.5		
.36	⅞	2¾	1.19	24.2		
.28½	¾	2¼	.87	18.1		
.21½	⅝	2	.61	12.8		
.19¼	9/16	1¾	.49	10.5		
.16¼	½	1½	.39	8.4		
.15	7/16	1¼	.30	6.6		
.14¼	⅜	1⅛	.22	4.9		

19 Plow Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$5.35	3½	11	19.	392.	See Handbook	See Handbook
4.65	3¼	10¼	16.37	341.		
3.95	3	9½	13.95	293.		
3.30	2¾	8⅝	11.72	248.		
2.75	2½	7⅞	9.69	206.		
2.20	2¼	7⅛	7.85	168.		
2.00	2⅛	6¾	7.	151.		
1.80	2	6¼	6.20	135.		
1.65	1⅞	5¾	5.45	119.		
1.50	1¾	5½	4.75	104.		
1.25	1⅝	5	4.09	89.8		
1.15	1½	4¾	3.49	76.7		
.93	1⅜	4¼	2.93	64.6		
.78	1¼	4	2.42	53.5		
.66	1⅛	3½	1.96	43.5		
.52½	1	3	1.55	34.4		
.43	⅞	2¾	1.19	26.5		
.34	¾	2¼	.87	19.8		
.25	⅝	2	.61	14		
.22½	9/16	1¾	.49	11.5		
.19	½	1½	.39	9.2		
17¾	7/16	1¼	.30	7.2		
17	⅜	1⅛	.22	5.3		

20 Monitor Silver Strand Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$6.10	3½	11	19.	451.	See Handbook	See Handbook
5.25	3¼	10¼	16.37	392.		
4.50	3	9½	13.95	337.		
3.75	2¾	8⅝	11.72	285.		
3.15	2½	7⅞	9.69	237.		
2.75	2¼	7⅛	7.85	194.		
2.40	2⅛	6¾	7.	174.		
2.10	2	6¼	6.20	155.		
1.90	1⅞	5¾	5.45	137		
1.76	1¾	5½	4.75	119.5		
1.45	1⅝	5	4.09	103.3		
1.25	1½	4¾	3.49	88.2		
1.05	1⅜	4¼	2.93	74.3		
.86	1¼	4	2.42	61.5		
.75	1⅛	3½	1.96	49.9		
.59	1	3	1.65	39.5		
.46	⅞	2¾	1.19	30.5		
.36	¾	2¼	.87	22.8		
.27	⅝	2	.61	16.1		
.23	9/16	1¾	.49	13.2		
.20	½	1½	.39	10.6		
.18½	7/16	1¼	.30	8.3		
.17½	⅜	1⅛	.22	6.1		

Steel Clad Hoisting Rope

27 Plow Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$2.14	2¼	2	7.82	140.	See Handbook	See Handbook
1.87	2 1/16	1⅞	7.01	123.		
1.68	1 15/16	1¾	6.05	108.		
1.42	1 13/16	1⅝	5.39	94.		
1.25	1 11/16	1½	4.66	80.5		
1.09	1 9/16	1⅜	3.99	68.		
.93	1 7/16	1¼	3.35	56.5		
.79	1 5/16	1⅛	2.75	46.		
.66	1 3/16	1	2.23	36.5		
.55	1	⅞	1.66	28.		
.46	⅞	¾	1.40	20.6		
.37	¾	⅝	1.05	14.4		
.30	⅝	½	64	9.4		

28 Monitor Silver Strand Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$2.40	2¼	2	7.82	161.	See Handbook	See Handbook
2.15	2 1/16	1⅞	7.01	142.		
1.97	1 15/16	1¾	6.05	124.		
1.64	1 13/16	1⅝	5.39	108.		
1.41	1 11/16	1½	4.66	92.5		
1.19	1 9/16	1⅜	3.99	78.5		
1.92	1 7/16	1¼	3.35	65.		
.86	1 5/16	1⅛	2.75	53.		
.72	1 3/16	1	2.23	42.		
.59	1	⅞	1.66	32.2		
.51	⅞	¾	1.40	23.7		
.40	¾	⅝	1.05	16.6		
.34	⅝	½	.64	10.8		

Steel Clad Special Flexible Hoisting Rope

31 Plow Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$2.90	2½	2¼	10.03	168.	See Handbook	See Handbook
2.38	2¼	2	7.82	135.		
2.08	2 1/16	1⅞	7.01	119.		
1.90	1 15/16	1¾	6.05	104.		
1.62	1 13/16	1⅝	6.39	89.8		
1.44	1 11/16	1½	4.66	76.7		
1.23	1 9/16	1⅜	3.99	64.6		
1.04	1 7/16	1¼	3.35	53.5		
.90	1 5/16	1⅛	2.75	43.5		
.75	1 3/16	1	2.23	34.4		
.62	1	⅞	1.66	28.5		

32 Monitor Silver Strand Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$3.20	2½	2¼	10.03	194.	See Handbook	See Handbook
2.66	2¼	2	7.82	155.		
2.33	2 1/16	1⅞	7.01	137.		
2.14	1 15/16	1¾	6.05	119.5		
1.80	1 13/16	1⅝	5.39	103.3		
1.57	1 11/16	1½	4.66	88.2		
1.35	1 9/16	1⅜	3.99	74.3		
1.14	1 7/16	1¼	3.35	61.5		
1.00	1 5/16	1⅛	2.75	49.9		
.82	1 3/16	1	2.23	39.5		
.67	1	⅞	1.66	30.5		

Marlin Clad Hoisting Rope

38 Cast Steel

List Price per Foot	Diameter in Inches before Serving	Approximate Diameter after Serving with Marlin	Approximate Circumference after Serving with Marlin	Breaking Strength in Tons of 2000 Lbs.	Allowable Working Strains in Tons of 2000 Lbs.	Minimum Size of Drum or Sheave in Feet	Approximate Weight per Foot in Lbs.
.....	2¼	2⅝	8¼	132.	See Handbook	See Handbook	8.00
.....	2	2⅜	7½	105.			6.38
.....	1⅞	2¼	7	92.			5.69
$1.85	1¾	2⅛	6⅝	81.			5.00
1.62	1⅝	2	6¼	70.			4.29
1.45	1½	1⅞	5⅞	60.			3.69
1.24	1⅜	1¾	5½	50.5			3.14
1.04	1¼	1⅝	5⅛	42.			2.58
.85	1⅛	1½	4¾	34.			2.12
.75	1	1⅜	4 5/16	27.			1.70
.66	⅞	1¼	3⅞	21.			1.32
.55	¾	1⅛	3½	15.4			1.10
.42	⅝	1	3⅛	10.8			.81
.38	9/16	⅞	2¾	8.8			.62
.34	½	11/16	2½	7.1			.51
.30½	7/16	¾	2⅜	5.5			.42
.27	⅜	11/16	2⅛	4.1			.36
.24½	5/16	⅝	2	2.9			.28
22	¼	9/16	1½	1.9			.21

39 Extron Cast Steel

List Price per Foot	Diameter in Inches before Serving	Approximate Diameter after Serving with Marlin	Approximate Circumference after Serving with Marlin	Breaking Strength in Tons of 2000 Lbs.	Allowable Working Strains in Tons of 2000 Lbs.	Minimum Size of Drum or Sheave in Feet	Approximate Weight per Foot in Lbs.
.....	2¼	2⅝	8¼	147.	See Handbook	See Handobok	8.00
.....	2	2⅜	7½	117.			6.38
.....	1⅞	2¼	7	103.			5.65
$2.04	1¾	2⅛	6⅝	90.			5.00
1.78	1⅝	2	6¼	78.			4.29
1.60	1½	1⅞	5⅞	66.5			3.69
1.36	1⅜	1¾	5½	56.5			3.14
1.15	1¼	1⅝	5⅛	47.			2.58
95	1⅛	1½	4¾	38.			2.12

Marlin Clad Hoisting Rope

39 Extron Cast Steel—Continued

List Price per Foot	Diameter in Inches before Serving	Approximate Diameter after Serving with Marlin	Approximate Circumference after Serving with Marlin	Breaking Strength in Tons of 2000 Lbs.	Allowable Working Strains in Tons of 2000 Lbs.	Minimum Size of Drum or Sheave in Feet	Approximate Weight per Foot in Lbs.
$0.83	1	1⅜	4 5/16	30.3	See Handbook	See Handbook	1 70
.73	⅞	1¼	3⅞	23.3			1 32
.61	¾	1⅛	3½	17.1			1.10
.47	⅝	1	3⅛	12.			.81
.42	9/16	⅞	2¾	9.7			.62
.36	½	13/16	2½	7 8			.51
.33	7/16	¾	2⅜	6.1			.42
.30	⅜	11/16	2⅛	4 6			.36
.27	5/16	⅝	2	3 2			.28
.24	¼	9/16	1½	2 1			.21

40 Plow Steel

....	2¼	2⅝	8¼	161.	See Handbook	See Handbook	8.00
. .	2	2⅜	7½	129.			6 38
.....	1⅞	2¼	7	113.			5.65
$2.20	1¾	2⅛	6⅝	99.			5.00
1.90	1⅝	2	6¼	86.			4.29
1.70	1½	1⅞	5⅞	74.			3.69
1.46	1⅜	1¾	5½	62.5			3.14
1.22	1¼	1⅝	5⅛	52.			2.58
1.02	1⅛	1½	4¾	42.			2 12
.89	1	1⅜	4 5/16	33 5			1 70
.79	⅞	1¼	3⅞	25.7			1.32
.66	¾	1⅛	3½	18.9			1.10
.51	⅝	1	3⅛	13.2			.81
.45	9/16	⅞	2¾	10.7			.62
.38	½	13/16	2½	8.6			.51
.35	7/16	¾	2⅜	6.7			.42
.32	⅜	11/16	2⅛	5.0			.36
.29	5/16	⅝	2	3.6			.28
.26	¼	9/16	1½	2 3			.21

Tiller Rope or Hand Rope

Diameter in Inches	Circumference in Inches	List Price per Foot			Approximate Weight per Foot in Pounds	Approximate Breaking Strength in Tons of 2000 Lbs. Each		
		43	44	44A				
		Iron	Cast Steel	Plow Steel		Iron	Cast Steel	Plow Steel
1	3	$0.33	$0 43	$0 65	1 10	8.6	16.7	20.1
⅞	2¾	.27	36	.55	.84	6.6	13.	15.6
¾	2¼	.22	.30	.45	.62	5 1	9 7	11.7
⅝	2	17	.24	.36	.43	3 5	6 9	8.28
9/16	1¾	14	.20	29	.35	3 02	5 6	6 73
½	1½	.11½	.17	.26	.28	2 39	4 46	5 33
7/16	1¼	10	15	.23	.21	1 91	3 44	4 13
⅜	1⅛	.09	14	21	16	1 40	2 54	3 05
5/16	1	08	12½	18	11	.977	1.77	2 13
¼	¾	.07½	11	.16	07	.625	1 14	1.36
3/16	9/16	07	10		042	.35	.65	....

Non-Spinning Hoisting Rope

47 Cast Steel

List Price per Foot	Diameter in Inches	Approximate Circumference in Inches	Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
$0.90	1¾	5½	5.3	81	See Handbook	See Handbook
.77	1⅝	5	4.57	70.		
.66	1½	4¾	3.89	60.		
.56	1⅜	4¼	3 27	51.		
46	1¼	4	2.70	42 5		
.38	1⅛	3½	2.19	34.2		
.31	1	3	1.73	27.3		
.25	⅞	2¾	1.32	21 1		
.20½	¾	2¼	.97	15.6		
.05¾	⅝	2	.68	10 9		
.13¾	9/16	1¾	.55	8.9		
.12	½	1½	.43	7 1		
.10½	7/16	1¼	33	5.5		
09½	⅜	1⅛	24	4 1		

48 Extron Cast Steel

$1 10	1¾	5½	5 30	91.	See Handbook	See Handbook
.94	1⅝	5	4.57	79.		
.80	1½	4¾	3.89	67.		
.68	1⅜	4¼	3.27	57.		
.56	1¼	4	2.70	47.2		
.46	1⅛	3½	2.19	38.4		
.37	1	3	1.73	30.5		
.29	⅞	2¾	1.32	23.5		
.24	¾	2¼	.97	17.3		
18	⅝	2	.68	12.1		
15¾	9/16	1¾	.55	9.8		
13¾	½	1½	.43	7.9		
12	7/16	1¼	.33	6.1		
11	⅜	1⅛	24	4.6		

Non-Spinning Hoisting Rope

49 Plow Steel

List Price per Foot	Finished Dia. over Serving in Inches	Diameter of Bare Rope Inches	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advise
$1 30	1¾	5½	5.3	100.	See Handbook	See Handbook
1.08	1⅝	5	4.57	87.		
.93	1½	4¾	3.89	74.5		
.79	1⅜	4¼	3.27	63.		
.65	1¼	4	2.70	52.3		
.54	1⅛	3½	2.19	42 5		
43	1	3	1.73	33.8		
.34½	⅞	2¾	1.32	25.9		
.28	¾	2¼	.97	19.		
.21	⅝	2	.68	13.3		
.18¼	9/16	1¾	.55	10.8		
.16	½	1½	.43	8.7		
.14	7/16	1¼	.33	6.7		
.13	⅜	1⅛	24	5.1		

50 Monitor Silver Strand Steel

$1.60	1¾	5½	5.3	115.	See Handbook	See Handbook
1.30	1⅝	5	4.57	100.		
1 10	1½	4¾	3.89	85 5		
.90	1⅜	4¼	3.27	72 5		
.75	1¼	4	2.70	60.		
.62	1⅛	3½	2.19	49.		
.50	1	3	1.73	38.8		
.39	⅞	2¾	1.32	29.8		
.31	¾	2¼	.97	21.9		
.22½	⅝	2	.68	15.3		
19	9/16	1¾	.55	12.5		
17	½	1½	.43	10.		
.15½	7/16	1¼	.33	7.8		
14½	⅜	1⅛	.24	5.8		

Flattened Strand Haulage or Transmission Rope

52 Cast Steel

Diameter in Inches	List Price per Foot	TYPE C			TYPE D			Diameter of Drum or Sheave in Feet Advised
		Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Approximate Weight per Foot in Pounds	
1½	$0.75	54.	See Handbook	3.49	67.	See Handbook	4 05	See Handbook
1⅜	.64	46.		2.93	57.		3.40	
1¼	.54	39.		2.42	48.		2.81	
1⅛	.45	31.		1 96	39.		2.28	
1	.35	24.8		1.55	31.		1.80	
⅞	.275	19 2		1 19	24.		1.39	
¾	.205	14.3		.87	17 8		1 01	
⅝	.14	10.		.61	12 4		.70	
½	.10	6.5		.39	8 1		.45	
⅜	.07	3 7		22	4 6		.25	

53 Extron Cast Steel

1½	$0.93	60.	See Handbok	3.49	74.	See Handbook	4.05	See Handbook
1⅜	.80	50.		2.93	62.		3 40	
1¼	.68	42.		2.42	52.		2.81	
1⅛	.54	35.		1.96	43.		2.28	
1	.45	27.5		1.55	34.		1.80	
⅞	.35	21.2		1.19	26 5		1.39	
¾	.27	15.6		.87	19.5		1.01	
⅝	.18	10.8		.61	13 5		.70	
½	.14	7.1		.39	8 8		.45	
⅜	.11	4 0		22	5 0		.25	

54 Monitor Silver Strand Steel

1½	$1 28	75.	See Handbook	3.49	93.	See Handbook	4 05	See Handbook
1⅜	1.08	63.		2.93	79.		3.40	
1¼	.88	52.		2.42	65.		2.81	
1⅛	.70	43.		1.96	54.		2.28	
1	.58	34.5		1.55	43.		1.80	
⅞	.44	26.6		1.19	33.2		1 39	
¾	.35	19.7		.87	24 6		1.01	
⅝	.25	13.8		.61	17 2		.70	
½	.16¼	8.8		.39	11.		.45	
⅜	.13¼	5.1		.22	6.35		.25	

Flattened Strand Hoisting Rope

56 Cast Steel

		TYPE A			TYPE B			
2¾	$2 65	..	See Handbook	. .	233.	See Handbook	13 6	See Handbook
2½	2 20	..		.	193.		11 2	
2¼	1 82	.		. .	158.		9.1	
2	1.44	.		. . .	125.		7 2	
1⅞	....	..		.	110.		6.33	
1¾	1 21	.....		....	96.		5 15	

Flattened Strand Hoisting Rope

56 Cast Steel—Continued

Diameter in Inches	List Price per Foot	Type A			Type B			Diameter of Drum or Sheave in Feet Advised
		Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Approximate Weight per Foot in Pounds	Breaking Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Approximate Weight per Foot in Pounds	
1⅝	$0 96	......	See Handbook	.....	83.	See Handbook	4.75	See Handbook
1½	.86	58.		3.49	71.		4.05	
1⅜	.73	49.		2.93	60.		3.40	
1¼	.595	41.		2 42	50.5		2 81	
1⅛	.50	33.		1.96	40.		2 28	
1	.395	26.		1.55	32.		1 80	
⅞	.30	20.1		1.19	25.		1.39	
¾	.24	14.8		.87	18.4		1.01	
⅝	.18¼	10 4		.61	12 9		.70	
9/16	.165	8.5		.49	10 5		.57	
½	.145	6.8		.39	8 4		.45	
7/16	....	......		.....	6 6		.34	
⅜	.12½	4.		22	4 9		.25	
5/16	....	......		.....	3 5		.18	
¼	....	......		.....	2 3		.11	

57 Extron Cast Steel

2¾	$3 60	......	See Handbook	.....	257.	See Handbook	13.6	See Handbook
2½	2 80	......		.....	214.		11.2	
2¼	2.20	......		.....	176.		9.1	
2	1.77	......		.....	139.		7.2	
1⅞	....	......		.....	123.		6.33	
1¾	1.55	......		.. ..	107.		5.51	
1⅝	1.30	......		.....	93.		4.75	
1½	1.05	64.		3.49	79.		4.05	
1⅜	.90	54.		2 93	67.		3.40	
1¼	.70	45.		2.42	56.		2.81	
1⅛	.59	37.		1.96	45.5		2.28	
1	.48	29.		1.55	36.		1.80	
⅞	.38	22.4		1.19	27 90		1 39	
¾	.30	16.5		.87	20 5		1 01	
⅝	.225	11.6		.61	14 4		.70	
9/16	.195	9.4		.49	11.6		.57	
½	.175	7.5		.39	9.3		.45	
7/16	.. ....	.....		.....	7 2		.34	
⅜	.15¼	4 4		.22	5 5		.25	
5/16	. ....	......		.....	3.8		.18	
¼	....	... ..		.....	2.5		.11	

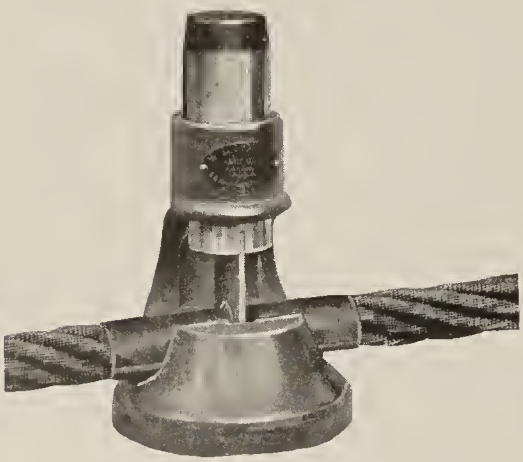
58 Plow Steel

2¾	... ...	. ....	See Handbook	.....	281.	See Handbook	13.6	See Handbook
2½	....	......		.....	235.		11.2	
2¼	$2 50	......		.. ..	193.		9.1	
2	2.00	......		....	154.		7.2	
1⅞	....	.. ...		.. .	135.		6.33	
1¾	1.80	......		. .	118.		5.51	
1⅝	1.42	......		.....	103.		4.75	
1½	1 20	70.		3 49	88.		4 05	
1⅜	1.00	60.		2.93	74.		3 40	
1¼	.79	50.		2 42	62.		2 81	
1⅛	.64½	41.		1 96	50.5		2.28	
1	.53½	32.		1 55	40.		1 80	
⅞	.43	24.8		1 19	30		1 39	
¾	.33½	18 2		.87	22.6		1.01	
⅝	.25	12.7		61	15.8		.70	
9/16	.22	10.3		.49	12.8		.57	
½	.19	8.2		.39	10.3		.45	
7/16	....	......		.....	8.		.34	
⅜	....	4 8		22	6		.25	
5/16	..... .	......		. ...	4 2		.18	
¼	.... ..	......		.....	2 7		.11	

59 Monitor Silver Strand Steel

2¾	$4.30	......	See Handbook	.....	323.	See Handbook	13.6	See Handbook
2½	3.50	......		.....	270.		11 2	
2¼	2.85	.....		8.00	222.		9 1	
2	2.25	.. ...		6.30	177.		7.2	
1⅞	....	......		.....	156.		6.33	
1¾	2 08	......		4.85	136.		5.51	
1⅝	1.56	......		4.15	118.		4.75	
1½	1.37	81.		3.49	101.		4 05	
1⅜	1.12	69.		2.93	86.		3.40	
1¼	.89	57.		2 42	71.5		2.81	
1⅛	.71	47.		1.96	58.		2.28	
1	.60	37.		1 55	46.		1.80	
⅞	.49	28.5		1.19	35.4		1.39	
¾	.375	20.9		.87	26.		1.01	
⅝	.28	14.6		.61	18.2		.70	
9/16	.25	11.9		49	14.8		.57	
½	.20¾	9.5		.39	11.8		.45	
7/16	....	......		.....	9.2		.34	
⅜	.18¼	5.6		.22	6.9		.25	
5/16	......	......		.....	4.9		.18	
¼	....	......		.....	3.1		.11	

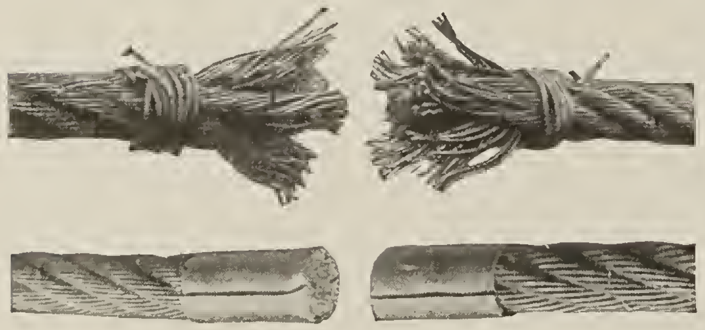
STARRETT CABLE CUTTER



The Starrett Steel Band and Cable Cutter introduces a new method of binding or seizing and cutting steel cable, converting a tedious and disagreeable operation into a simple task.

Any grade or size of cable up to one inch (1) may be seized or whipped and cut by one man in less than one minute, and both ends of the cable will be left incased in a steel band and substantially of the same original diameter as the cable.

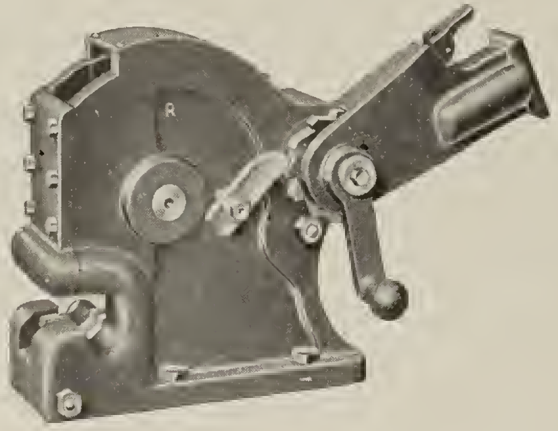
This eliminates the waste ends on your cable and makes it possible to thread the cable through a small opening at any time. Only a blow or two with a heavy hammer is necessary to cut the tough strands. The V-shaped blade in the cutter will gradually become round and will sharpen itself.



(upper view) and clearly illustrates the advantages of the new method (lower view.)

Th use of the Starrett Cable Cutter with the Starrett Steel Bands, which are made of tough steel in sizes that will fit any cable up to one inch in diameter, eliminates the risk of injury to the hands from the raggel wire ends and leaves the cable ready to thread through a small opening. The entire operation takes less than one minute.

LEVER TYPE CUTTER



The new lever type Starrett Cable Cutter is designed so that you can cut a 1 inch cable in a very few seconds with only one hand. The ratchet-lever principle permits the cutting to be done in from three to seven strokes as you desire.

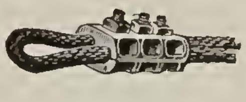
This cutter can be bolted to the floor where it is solid and always ready for use such as in a warehouse or shop. It is also easily portable weighing only 100 pounds complete and can be taken from job to job.

The shape of the die holds the cable firmly in place and allows the blade to always cut straight through the cable.

STARRETT
SIZE
1
PATENTED
CABLE BANDS

Starrett Bands are made in any size up to 1 inch. These bands are easily attached to any cable and when cut will leave a firm end which is actually the same size as the cable. With the use of these bands you can easily thread the cut cable through any opening.

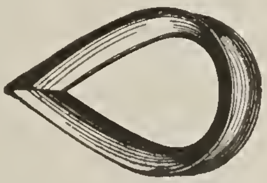
WIRE ROPE CLAMPS



Extra heavy. Cast iron, painted. Sizes ⅞ inch and smaller are made with three bolts. Sizes 1 inch and larger are made with four bolts.

Price on application.

GALVANIZED OVAL THIMBLES



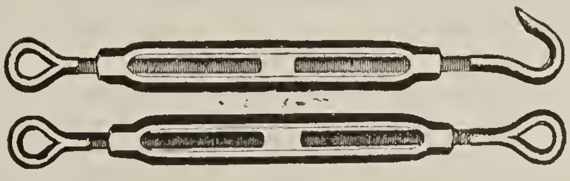
Galvanized oval thimbles are heavily coated with zinc.

Diameter of Rope In Inches	Each	Weight per 100 In Pounds	Diameter of Rope In Inches	Each	Weight per 100 In Pounds
⅛	$0.04	.6	1⅛	$0.28	94
3/16	.05	1.2	1¼	.33	118
¼	.05	1.8	1⅜	.42	154
5/16	.06	2.2	1½	.50	208
⅜	.07	4.2	1⅝	.65	266
7/16	.08	6.5	1¾	.75	327
½	.09	9	1⅞	.95	398
9/16	.10	11	2	1.10	495
⅝	.11	16	2¼	1.58	700
¾	.13	25	2½	2.08	960
⅞	.14	38	2¾	3.40	1290
1	.18	62	3	3.90	1670

Spliced in and Served

Diameter of Rope In Inches	List Price Compl'e for Iron Rope	List Price Compl'e for Steel Rope	Diameter of Rope In Inches	List Price Compl'e for Iron Rope	List Price Compl'e for Steel Rope
¼	$1.00	$1.10	¾	$1.85	$2.00
5/16	1.00	1.10	⅞	2.40	2.55
⅜	1.05	1.15	1	2.85	3.00
7/16	1.10	1.20	1⅛	3.65	3.90
½	1.15	1.25	1¼	4.35	4.70
9/16	1.20	1.30	1⅜	5.25	5.75
⅝	1.45	1.55	1½	6.00	6.50

FORGED TURNBUCKLES

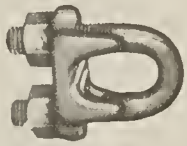


Self-Colored and Galvanized

Hook and eye; hook and hook; eye and eye.

	OPENING		or	TAKE UP		or		DRAW	
Dia.	6	9	12	15	18	24	36	48	72
⅜	.65	.80	1.00	....	....	....	....	....	....
7/16	.75	.95	1.15	....	....	....	....	....	....
½	.85	1.05	1.30	1.70	2.15	3.00	3.40	5.10	6.80
9/16	.90	1.15	1.35	1.80	2.25	3.15	3.60	5.40	7.20
⅝	1.00	1.25	1.50	2.00	2.50	3.50	4.00	6.00	8.00
¾	1.35	1.70	2.05	2.70	3.40	4.75	5.40	8.10	10.80
⅞	1.90	2.40	2.85	3.80	4.75	6.65	7.60	11.40	15.20
1	2.40	3.00	3.60	4.80	6.00	8.40	9.60	14.40	19.20
1⅛	2.85	3.55	4.30	5.70	7.15	10.00	11.40	17.00	22.80
1¼	3.75	4.70	5.65	7.50	9.40	13.15	15.00	22.50	30.00
1⅜	4.40	5.50	6.60	8.80	11.00	15.40	17.60	26.40	35.20
1½	5.10	6.40	7.65	10.20	12.75	17.85	20.40	30.60	40.80

WIRE ROPE CLIPS



Clips are not recommended as permanent fastenings on hoisting rope. They are easily applied and taken off, requiring no special skill. The U-bolt should bear on the short end of the rope. Not fewer than two clips to be used and preferably four to six.

Black or Galvanized

Size Inches	List Price Per Hundred	Standard Package Quantity	Standard Package Weight Pounds Per Pkg.
3/16	$ 6.00	400	33
¼	6.00	200	33
5/16	6.50	175	33
⅜	8.25	200	50
7/16	9.50	100	32
½	11.50	200	75
9/16	16.50	75	47
⅝	17.00	125	77
¾	26.50	150	151
⅞	33.50	100	149
1	39.00	75	142
1⅛	66.50	PACKED IN BULK ANY QUANTITY	307 WT. PER 100
1¼	72.00		374
1⅜	104.75		555
1½	116.75		645
1¾	239.00		1085
2	315.25		1610

NOTE:—Be sure to specify if black or galvanized clamps are wanted.

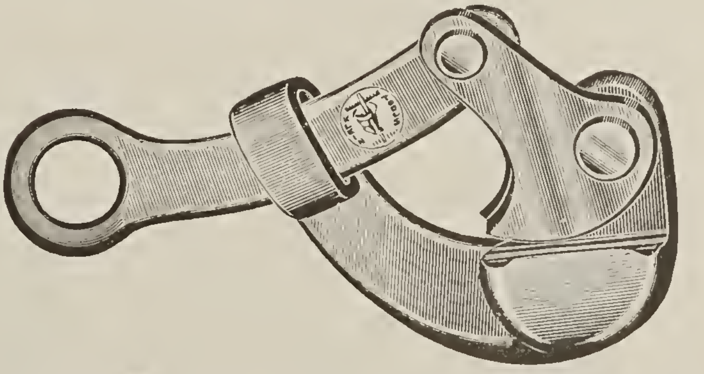
Note the Standard Package quantities arranged for your convenience.

GENUINE CROSBY

Drop forged steel saddles, grooved open hearth steel clips or "U" bolts; galvanized.

Diameter rope, inches....	¼	5/16	⅜	½	⅝	¾
Width saddles, inches ...	13/16	1⅜	1½	2	2⅛	2⅝
Diameter "U" bolts, in...	5/16	⅜	⅜	½	½	⅝
Net wt. each, pounds ...	3/16	¼	¼	½	¾	1½
Each	$0.40	.40	.46	.52	.64	.74
Diameter rope, inches			⅞	1	1¼	1½
Width saddless, inches			2 11/16	3 3/16	3¼	3½
Diameter "U" bolts, inches			¾	¾	⅞	⅞
Net wt. each, pounds			2¼	3	4½	5½
Each			$0.86	.96	1.24	1.70

STEEL COME ALONG



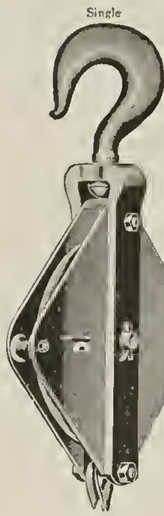
For Tightening Guy Lines, Cables and Carrier Lines

A popular grip for all-around work. The greater the pull the tighter it holds. May be released with a shake of the rope. Made in three sizes.

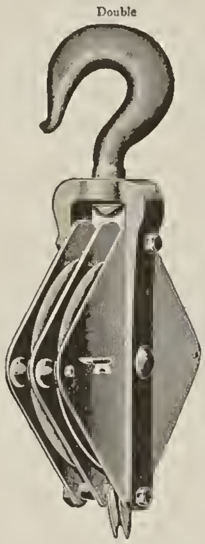
Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

ANVIL BRAND EXTRA HEAVY WIRE ROPE BLOCKS

With Stiff Swivel Hooks
Diamond Shell



Iron Bushed No. 731-C
Bronze Bushed No. 731-B

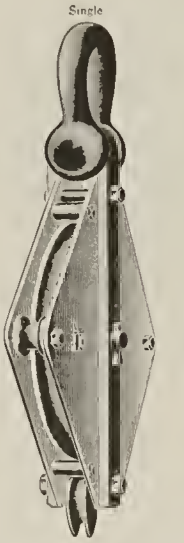


Iron Bushed No. 732-C
Bronze Bushed .No. 732-B

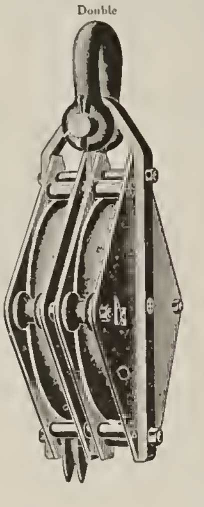
DIMENSIONS		IRON BUSHED			PHOSPHOR BRONZE OR METALINE SELF-LUBRICATING BUSHED		
Size Sheave, inches	For Dia. Rope, inches	No. 731-C Single, each	No. 732-C Double, each	No. 733-C Triple, each	No. 731-B Single, each	No. 732-B Double, each	No. 733-B Triple, each
8 x 1¼ x ⅞	½	$11 00	$16 00	$22 50	$14 00	$22 00	$32 00
10 x 1¼ x 1	⅝	14 00	20 00	28 00	17 00	26 00	37 00
12 x 1½ x 1⅛	¾	16 00	23 00	31 00	19 00	29 00	41 00
14 x 1½ x 1¼	¾	18 00	25 00	36 00	21 00	31 00	45 00
16 x 1¾ x 1½	⅞	31 00	40 00	46 00	36 00	50 00	72 00
18 x 1¾ x 1½	1	34 50	45 00	60 00	40 00	56 00	78 00

The bushing is the life of the block and the extra cost of blocks fitted with Phosphor Bronze Self-Lubricating Bushed Sheaves is far more than repaid by increased life and saving in repairs.

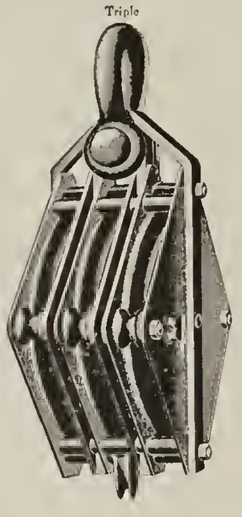
With Shackles
Diamond Shell



Iron Bushed No. 741-C
BronzeBushed No. 741-B



Iron Bushed No. 742-C
Bronze Bushed No. 742-B



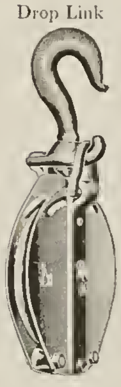
Iron Bushed No. 743-C
Bronze Bushed No. 743-B

DIMENSIONS		IRON BUSHED			PHOSPHOR BRONZE OR METALINE SELF-LUBRICATING BUSHED		
Size Sheave, inches	For Dia. Rope, inches	No. 741-C Single, each	No. 742-C Double, each	No. 743-C Triple, each	No. 741-B Single, each	No. 742-B Double, each	No. 743-B Triple, each
8 x 1¼ x ⅞	½	$11 00	$16 00	$22 50	$14 00	$22 00	$32 00
10 x 1¼ x 1	⅝	14 00	20 00	28 00	17 00	26 00	37 00
12 x 1½ x 1⅛	¾	16 00	23 00	31 00	19 00	29 00	41 00
14 x 1½ x 1¼	¾	18 00	25 00	36 00	21 00	31 00	45 00
16 x 1¾ x 1½	⅞	31 00	40 00	46 00	36 00	50 00	72 00
18 x 1¾ x 1½	1	34 50	45 00	60 00	40 00	56 00	78 00
20 x 1⅞ x 1½	1	43 00	60 00	72 00	49 00	72 00	90 00

The center straps in double and triple blocks extend full length of shell, furnishing proper support for center pin in middle of the block.

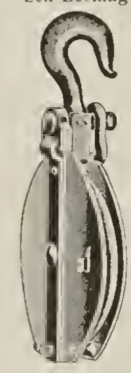
Wire Rope Snatch Blocks

Drop Link



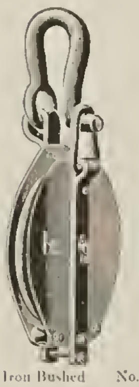
Iron Bushed No. 940-C
Bronze Bushed No. 940-B

Self-Locking



Iron Bushed No. 941-C
Bronze Bushed No. 941-B

Bail



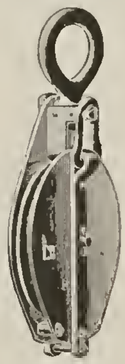
Iron Bushed No. 942-C
Bronze Bushed No 942-B

Diameter Sheave, inches	For Diameter Rope, inches	Iron Bushed, each	Phosphor Bronze or Metaline Bushed, Self-Lubricating, each
6	⅜	$11 00	$12 00
8	½	14 00	15 00
10	⅝	16 00	18 00
12	⅝-¾	18 00	21 00
14	¾	20 00	24 00
16	⅞	28 00	33 00
18	1	38 00	44 00
20	1¼	50 00	58 00
20	1½	60 00	68 00

Style No 940 has semi-circular guard pressed in shell over sheave to prevent wire slipping between shell and sheave.

Styles Nos 941 and 943 have center extension piece coming close to the sheave, preventing the wire rope from leaving the sheave It also prevents the shell from binding or pinching the sheave.

Self-Locking
Clasp with Eye

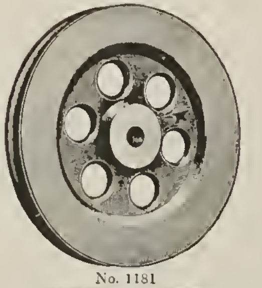


Iron Bushed No 943-C
Bronze Bushed No 943-B

The bushing is the life of the block and the extra cost of blocks fitted with Phosphor Bronze Self-Lubricating Bushed Sheaves is far more than repaid by increased life and saving in repairs.

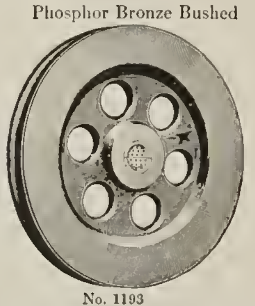
Extra Heavy Wire Rope Sheaves

Iron Bushed



No. 1181

Phosphor Bronze Bushed



No. 1193

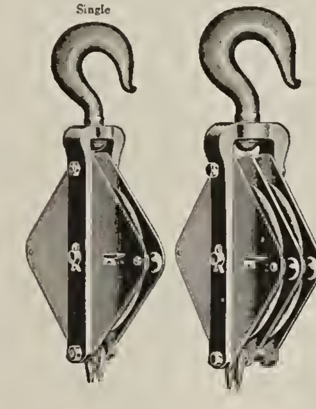
Size Sheave, inches	Thickness at Hub, inches	For Diameter Wire, inches	No. 1181 Iron Bushed each	No. 1193 Phosphor Bronze or Metaline Bushed, each
6 x 1 x ¾	1 1/16	½	$0 80	$1 60
6 x 1¼ x ¾	1 5/16	⅝	1 60	2 40
6 x 1½ x ¾	1 9/16	¾	1 80	2 60
7 x 1¼ x ¾	1 5/16	⅝	1 80	2 70
7 x 1½ x ⅞	1 9/16	¾	2 20	3 30
8 x 1 x ¾	1 1/16	½	1 60	2 40
8 x 1¼ x ⅞	1⅜	⅝	2 00	3 10
8 x 1½ x ⅞	1⅝	¾	2 30	3 40
9 x 1¼ x ⅞	1⅜	⅝	2 80	3 90
9 x 1½ x ⅞	1⅝	¾	3 00	4 10
10 x 1¼ x ⅞	1⅜	⅝	2 90	4 00
18 x 1¼ x 1	1⅜	⅝	2 90	4 10
10 x 1½ x ⅞	1⅝	¾	3 70	4 80
10 x 1½ x 1	1⅝	¾	3 70	4 90
10 x 1¾ x 1	1⅞	⅞	3 80	5 30
10 x 1¾ x 1⅛	1⅞	⅞	3 80	5 40
10 x 1¾ x 1¼	1⅞	⅞	3 80	5 50
12 x 1¼ x 1	1⅜	⅝	3 60	4 60
12 x 1½ x 1	1⅝	¾	4 70	6 10
12 x 1½ x 1⅛	1⅝	¾	4 70	0 20
12 x 1½ x 1¼	1⅝	¾	4 70	6 30
12 x 1½ x 1½	1⅝	¾	4 70	6 90
12 x 1½ x 2	1⅝	¾	6 20	8 80
12 x 1¾ x 1⅛	1⅞	⅞ and 1	5 20	0 90
12 x 1¾ x 1¼	1⅞	⅞ and 1	5 20	7 00
14 x 1¼ x 1	1⅜	⅝	6 00	7 20
14 x 1½ x 1⅛	1⅝	¾ and ⅞	6 20	7 80
14 x 1½ x 1¼	1⅝	¾ and ⅞	6 20	7 90
14 x 1½ x 1½	1⅝	⅞	7 00	8 50
14 x 1½ x 2	1⅝	⅞	7 80	10 40
14 x 1¾ x 1¼	2	1	7 50	8 60
14 x 1¾ x 1½	2	1	7 50	9 20
16 x 1½ x 1¼	1⅝	¾	8 20	10 20
16 x 1½ x 1½	1⅝	¾	8 20	10 50

Other sizes on application. Give size of sheave and diameter of wire.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

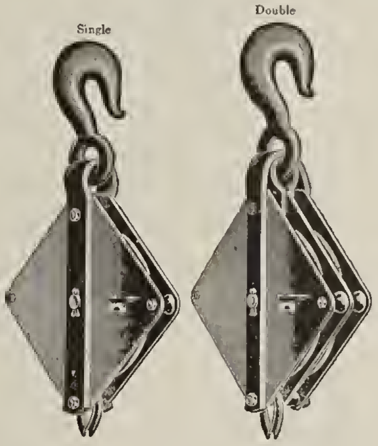
ANVIL BRAND REGULAR DIAMOND PATTERN WIRE ROPE BLOCKS

With Stiff Swivel Hooks


Single Double

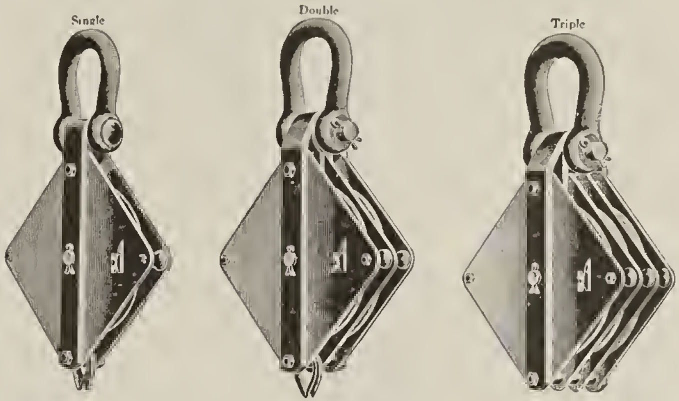
No. 641-C Iron Bushed No. 642-C
No. 641-B Bronze Bushed No. 642-B

With Loose Side Hooks


Single Double

No. 646-C Iron Bushed No. 647-C
No. 646-B Bronze Bushed No. 647-B

With Shackles


Single Double Triple

Iron Bushed No. 651-C
Bronze Bushed No. 651-B

Iron Bushed No. 652-C
Bronze Bushed No. 652-B

Iron Bushed No. 653-C
Bronze Bushed No. 653-B

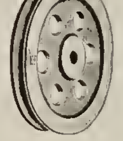
DIMENSIONS		IRON BUSHED			PHOSPHOR BRONZE OR METALINE SELF-LUBRICATING BUSHED		
Size Sheave, inches	For Dia. Rope, inches	No. 641-C No. 646-C Single, each	No. 642-C No. 647-C Double, each	No. 643-C No. 648-C Triple, each	No. 641-B No. 646-B Single, each	No. 642-B No. 647-B Double, each	No. 643-B No. 648-B Triple, each
6 x 1 x ¾	⅜	$ 6 00	$11 00	$14 00	$ 9 00	$17 00	$22 00
8 x 1¼ x ⅞	½	8 00	13 00	10 00	11 00	19 00	24 00
10 x 1¼ x ⅞	⅝	10 00	15 00	20 00	13 00	21 00	28 00
12 x 1½ x 1	⅝	12 00	17 00	23 00	15 00	23 00	31 00
14 x 1½ x 1⅛	¾	14 00	19 00	26 00	17 00	25 00	34 00
10 x 1¾ x 1¼	⅞	21 50	31 00	39 50	25 00	38 00	50 00

DIMENSIONS		IRON BUSHED			PHOSPHOR BRONZE OR METALINE SELF-LUBRICATING BUSHED		
Size Sheave, inches	For Dia. Rope, inches	No. 651-C Single, each	No. 652-C Double, each	No. 653-C Triple, each	No. 651-B Single, each	No. 652-B Double, each	No. 653-B Triple, each
6 x 1 x ¾	⅜	$ 6 00	$11 00	$14 00	$ 9 00	$17 00	$22 00
8 x 1¼ x ⅞	½	8 00	13 00	16 00	11 00	19 00	24 00
10 x 1¼ x ⅞	⅝	10 00	15 00	20 00	13 00	21 00	28 00
12 x 1½ x 1	⅝	12 00	17 00	23 00	15 00	23 00	31 00
14 x 1½ x 1⅛	¾	14 00	19 00	26 00	17 00	25 00	34 00
16 x 1¾ x 1¼	⅞	21 50	31 00	39 50	25 00	38 00	50 00

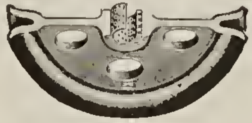
The bushing is the life of the block and the extra cost of blocks fitted with Phosphor Bronze Self-Lubricating Bushed Sheaves is far more than repaid by increased life and saving in repairs.

Regular Pattern Wire Rope Sheaves

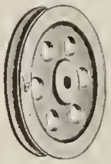
Iron Bushed


No. 1161

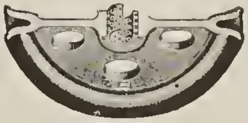
Phosphor Bronze Bushed
Self-Lubricating


No. 1173

Iron Bushed


No. 1161

Phosphor Bronze Bushed
Self-Lubricating


No. 1173

DIMENSIONS			PRICES	
Size Sheave, inches	Thickness at Hub, inches	For Diameter Wire, inches	No. 1161 Iron Bushed, each	No. 1173 Phosphor Bronze or Metaline Bushed, each
3 x ½ x ⅜	½	¼	$0 20	$0 75
3 x ¾ x ⅜	¾	⅜	55	1 35
3 x ¾ x ⅝	¾	⅜	80	1 60
4 x ⅝ x ½	11/16	5/16	40	1 25
4 x ¾ x ½	11/16	⅜	40	1 25
4 x 1 x ½	1 1/16	½	55	1 25
5 x ⅞ x ⅝	15/16	⅜	60	1 35
5 x 1 x ⅝	1 1/16	½	75	1 40
5 x 1⅛ x ⅝	1 3/16	½	90	1 70
6 x ¾ x ⅝	1	⅜	80	1 50
6 x 1 x ¾	1 1/16	⅜ and ½	80	1 60
6 x 1 x 1	1 1/16	½	1 05	1 90
6 x 1⅛ x ⅝	1 3/16	½	1 00	1 90
6 x 1¼ x ¾	1 5/16	⅝	1 20	2 00
6 x 1½ x ⅞	1 9/16	¾	1 50	2 60
7 x 1 x ¾	1 1/16	½	1 30	2 00
7 x 1¼ x ¾	1 5/16	⅝	1 50	2 40
8 x 1 x ¾	1⅛	½	1 30	2 00
8 x 1 x ⅞	1⅛	½	1 30	2 10
8 x 1¼ x ¾	1⅜	½ and ⅝	1 60	2 00
8 x 1¼ x ⅞	1⅜	½ and ⅝	1 60	2 70
8 x 1¼ x 1⅛	1⅜	⅝	1 90	3 20
8 x 1½ x ⅞	1⅝	¾	2 00	3 40
8 x 1¾ x 1	1⅞	⅞	3 70	5 20
9 x 1¼ x ⅞	1⅜	⅝	2 20	3 30
10 x 1 x ⅞	1⅛	½	1 60	2 50
10 x 1¼ x ¾	1⅜	⅝	2 20	3 20
10 x 1¼ x ⅞	1⅜	⅝	2 20	3 30
10 x 1¼ x 1	1⅜	⅝	2 20	3 40

DIMENSIONS			PRICES	
Size Sheave, inches	Thickness at Hub, inches	For Diameter Wire, inches	No. 1161 Iron Bushed, each	No. 1173 Phosphor Bronze or Metaline Bushed, each
10 x 1½ x ⅞	1⅝	⅝	$2 60	$4 00
10 x 1½ x 1	1⅝	⅝	2 60	4 10
10 x 1½ x 1	1⅝	¾	2 00	4 10
10 x 1½ x 1¼	1⅝	¾	3 20	4 80
12 x 1 x 1	1⅛	½	2 60	3 50
12 x 1¼ x 1	1⅜	⅝	3 40	4 40
12 x 1½ x 1	1⅝	¾	3 50	4 90
12 x 1½ x 1⅛	1⅝	¾	3 50	5 00
12 x 1½ x 1¼	1⅝	¾	3 50	5 20
12 x 1½ x 1½	1⅝	¾	3 50	5 80
12 x 1¾ x 1	1⅞	¾	4 00	5 50
12 x 1¾ x 1¼	1⅞	⅞	4 40	6 20
14 x 1¼ x 1	1⅜	⅝	5 10	6 30
14 x 1½ x 1	1⅝	¾	5 30	6 70
14 x 1½ x 1⅛	1⅝	¾	5 30	6 80
14 x 1½ x 1¼	1⅝	¾	5 30	7 00
14 x 1½ x 1½	1⅝	¾	5 30	7 60
14 x 1⅞ x 1	2	¾	6 00	7 60
14 x 1⅞ x 1⅛	2	¾	6 00	7 70
14 x 1¾ x 1	1⅞	⅞	6 00	7 60
14 x 1¾ x 1¼	2	1	6 90	8 80
16 x 1½ x 1¼	1¾	⅝	6 30	8 60
16 x 1½ x 1¼	1¾	¾ and ⅞	6 30	8 60
16 x 1¾ x 1¼	2	⅞ and 1	6 90	8 80
16 x 1¾ x 1½	2	⅞ and 1	6 90	9 40
18 x 1½ x 1¼	1¾	¾	3 00	9 50
18 x 1½ x 1½	1¾	¾	8 00	10 00
18 x 1¾ x 1¼	2	⅞ and 1	9 90	11 80
18 x 1¾ x 1½	2	⅞ and 1	9 90	12 40

Other sizes on application. Give size of sheave and diameter of wire.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

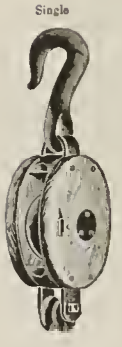
ANVIL BRAND BLOCKS

Regular Inside Iron Strapped Blocks

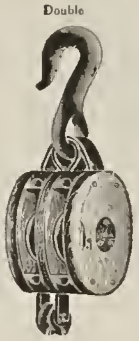
FOR MANILA ROPE

With Iron Sheaves or Lignumvitae Sheaves

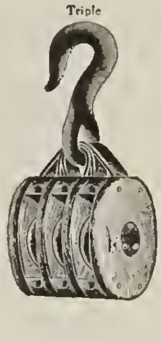
Loose Side Hooks



No 21 no Becket
No. 26 with Becket



No 22 no Becket
No 27 with Becket



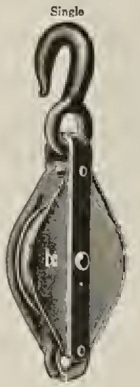
No. 23 no Becket
No. 28 with Becket

DIMENSIONS			IRON BUSHED			PATENT SIX-ROLLER BUSHED		
Size Sheave, inches	For Dia. Rope, inches	Length Shell, inches	Single, each	Double, each	Triple, each	Single, each	Double, each	Triple, each
1¾ x ½ x ⅜	⅜	3	$ 0 70	$ 1 30	$ 1 75	$ 1 10	$ 2 00	$ 2 90
2 x ½ x ⅜	⅜	3½	75	1 45	2 00	1 15	2 20	3 15
2¼ x ⅝ x ⅜	½	4	85	1 60	2 15	1 20	2 25	3 25
3 x ¾ x ⅜	⅝	5	90	1 75	2 25	1 25	2 35	3 50
3½ x 1 x ½	¾	6	1 10	2 00	2 90	1 50	2 85	4 40
4¼ x 1 x ½	⅞	7	1 30	2 40	3 50	1 70	3 35	5 00
4¾ x 1⅛ x ⅝	1	8	1 65	2 85	4 25	2 25	4 15	6 00
5½ x 1⅛ x ⅝	1	9	1 85	3 40	4 75	2 50	4 70	7 25
0¼ x 1¼ x ⅝	1⅛	10	2 75	4 50	6 25	3 50	6 00	8 50
7¼ x 1¼ x ¾	1⅛	11	4 45	7 50	10 65	5 30	9 20	13 20
8 x 1⅜ x ¾	1¼	12	4 45	7 50	10 65	5 30	9 20	13 20
9 x 1½ x ¾	1¼	13	7 00	10 50	15 00	8 15	12 80	18 45
9½ x 1⅝ x ⅞	1⅜	14	7 00	10 50	15 00	8 15	12 80	18 45
10 x 1⅝ x ⅞	1½	15	8 00	13 00	18 00	9 25	15 50	21 75
11 x 1¾ x ⅞	1⅝	16	10 00	15 00	22 00	11 50	18 00	26 50

Standard Steel Tackle Blocks

FOR MANILA ROPE

With Loose Side Hooks



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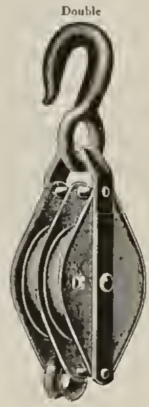

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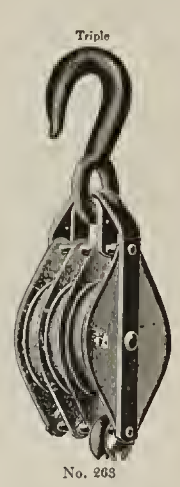


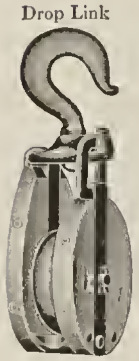
No. 263

They are lighter than wood blocks and equally strong. As there is no danger of shells splitting, they are more durable. Shells have nicely rounded edges to protect rope.

DIMENSIONS			IRON BUSHED			PATENT SIX-ROLLER BUSHED			PHOSPHOR BRONZE BUSHED, SELF-LUBRICATING		
Size Sheave, inches	For Dia Rope, inches	Length Shell, inches	Single, each	Double, each	Triple, each	Single, each	Double each	Triple each	Single, each	Double, each	Triple, each
1¾ x ½ x ⅜	⅜	3	$0 70	$1 30	$1 75	$1 10	$2 00	$2 90			
2¼ x ⅝ x ⅜	½	4	85	1 60	2 15	1 20	2 25	3 25	$1 50	$2 90	$4 15
3 x ¾ x ⅜	⅝	5	90	1 75	2 25	1 25	2 35	3 50	1 75	3 35	4 75
3½ x 1 x ½	¾	0	1 10	2 00	2 90	1 50	2 85	4 40	2 20	4 00	5 80
4¼ x 1 x ½	⅞	7	1 30	2 40	3 50	1 70	3 35	5 00	2 50	4 50	6 70
4¾ x 1⅛ x ⅝	1	8	1 65	2 85	4 25	2 25	4 15	6.00	3 25	5 70	8 50
5½ x 1⅛ x ⅝	1	9	1 85	3 40	4 75	2 50	4 70	7 25	3 70	6 75	10 00
6¼ x 1¼ x ⅝	1⅛	10	2 75	4 50	6 25	3 50	6 00	8 50	4 75	8 50	12 50
8 x 1⅜ x ¾	1¼	12	4 45	7 50	10 65	5 30	9 20	13 20	6 75	12 50	18 50

Wood Shell Snatch Blocks

FOR MANILA ROPE



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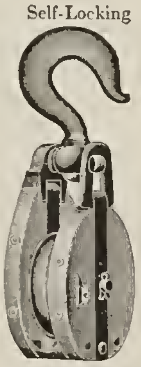

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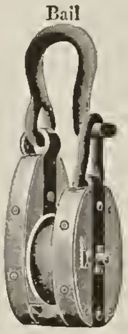

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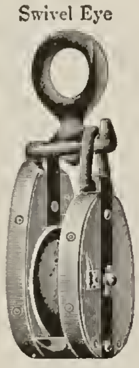


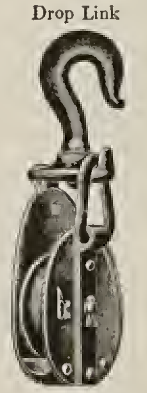
No. 388

Style No. 385 has Drop Forged Flattened Swivel Hook.
Style No. 386 has Extra Heavy Drop Forged Flattened Swivel Hook.
Furnished with Round Hooks when so desired.
All Styles have Drop Forged Heads and Links, and Straps extend to bottom of Shell.
Shells are Double Cross Bolted and Edges of Shell are nicely rounded.

Size Sheave, inches	For Dia. Rope, inches	Length Shell, inches	Iron Bushed, each	Self-Lubricating Iron Bushed, each	Patent Six-Roller Bushed, each	Phosphor Bronze or Metaline Bushed, each
3 x 1⅛ x ½	⅞	0	$ 4 00	$ 4 00	$ 4 65	$ 5 25
3½ x 1¼ x ½	⅞	7	4 75	4 75	5 50	6 00
4½ x 1⅜ x ⅝	1	8	5 75	5 75	0 60	7 25
5 x 1⅜ x ⅝	1⅛	9	0 75	0 75	7 75	8 50
5¾ x 1⅞ x ¾	1¼	10	8 50	8 50	10 00	11 00
6¾ x 2⅛ x ¾	1½	12	10 00	10 00	11 50	13 00
8 x 2¼ x ⅞	1¾	14	13 00	.....	15 00	16 50
9 x 2⅝ x 1	2	16	17 00	......	20 00	22 00
10 x 3 x 1⅛	2¼	18	25 00	.....	28 50	31 00
11 x 3½ x 1¼	2½	20	38 00	.....	43 00	40 00
11¾ x 4¼ x 1½	3	22	55 00	....	63 00	68 00
12½ x 4½ x 1½	3½	24	70 00	.....	78 00	80 00
14 x 4¾ x 1¾	4	20	90 00	....	......	110 00

Steel Shell Snatch Blocks

FOR MANILA ROPE



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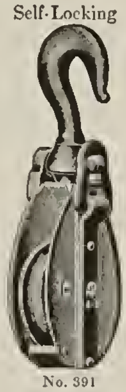

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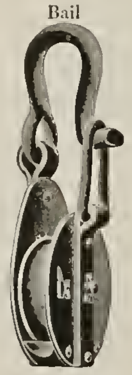

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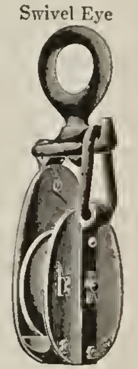
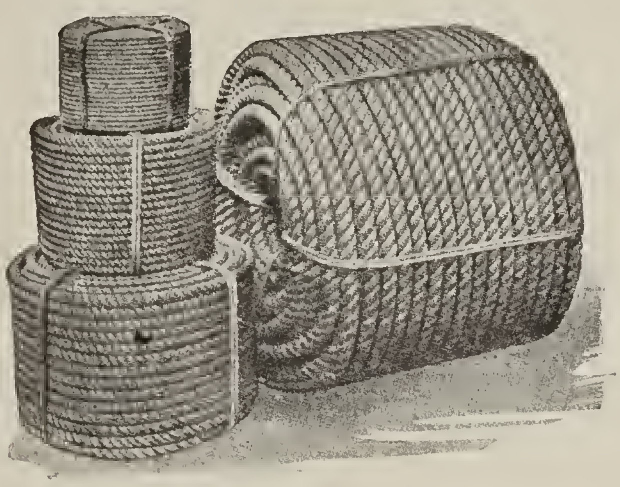


No. 393

Style No. 390 has Drop Forged Flattened Swivel Hook.
Style No. 391 has Extra Heavy Drop Forged Flattened Swivel Hook.
Furnished with Round Hooks when so desired
All styles have Drop Forged Heads and Links and Edges of Shells are nicely rounded.

Furnished with Sheaves for Wire Rope when so desired, but for heavy loads we recommend standard Wire Rope Snatch Blocks with larger sheaves and center pins, as shown on pages 94 and 95.

Size Sheave, inches	For Dia. Rope, inches	Length Shell, inches	Iron Bushed, each	Self-Lubricating Iron Bushed, each	Patent Six-Roller Bushed, each	Phosphor Bronze or Metaline Bushed, each
3 x 1⅛ x ½	⅞	0	$ 4 00	$ 4 00	$ 4 65	$ 5 25
3½ x 1¼ x ½	⅞	7	4 75	4 75	5 50	6 00
4½ x 1⅜ x ⅝	1	8	5 75	5 75	0 60	7 25
5 x 1⅜ x ⅝	1⅛	0	6 75	6 75	7 75	8 50
5¾ x 1⅞ x ¾	1¼	10	8 50	8 50	10 00	11 00
6¾ x 2⅛ x ¾	1½	12	10 00	10 00	11 50	13 00
8 x 2¼ x ⅞	1¾	14	13 00	......	15 00	10 50
9 x 2⅝ x 1	2	16	17 00	......	20 00	22 00
10 x 3 x 1⅛	2¼	18	25 00	......	28 50	31 00
11 x 3½ x 1¼	2½	20	38 00	......	43 00	40 00
11¾ x 4¼ x 1½	3	22	55 00	....	63 00	68 00
12½ x 4½ x 1½	3½	24	70 00	....	78 00	86 00
14 x 4¾ x 1¾	4	26	90 00	......	.....	110 00



Whitlock all manila waterflex rope is a new improved treater rope which makes it thoroughly water resisting and remains flexible, wet or dry, prevents wet rot and discoloration of rope in storage.

Whitlock Waterflex rope, base price, per lb. $0.60

Merchant manila is a pure manila rope throughout, but is manufactured from a lower grade of fibre than used in Whitlock all manila.

Merchant Manila rope, base price, per lb. $0.50

Whitlock Sisal; three-strand rope is made from the best pure white sisal fibre; lightly oiled.

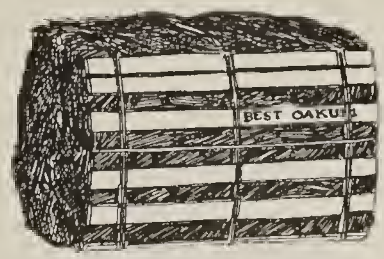
Whitlock Sisal rope, base price, per lb. $0.40

3/16", 1/4", 5/16", 3/8", and 7/16" in full coils only. Balance in half and full coils.

Whitlock Manila, Merchant Manila and Whitlock Sisal Rope Table

Size	Weight		Length	
Dia. inch	Full Coils	Per 100 ft.	Full Coils	Feet in 1 lb.
1/4	50	1.67	2,950	60.
3/8	65	3.45	1,850	29.
1/2	85	6.90	1,200	14.5
5/8	150	12.2	1,200	8.22
3/4	190	15.4	1,200	6.48
7/8	270	21.9	1,200	4.56
1	320	26.0	1,200	3.85
1 1/8	430	34.9	1,200	2.86
1 1/4	500	40.6	1,200	2.46
1 1/2	715	58.1	1,200	1.72
2	1,275	103.6	1,200	.965

ROPE OAKUM



Tarred Jute Packing or Rope Oakum

Made entirely of jute and is tarred; used for calking lead, soil and iron pipe; packed in coils and is about 1¼ inches in diameter; 8 threads.

No. 1T—List price, per pound 18

Untarred Jute Gasket Packing

Made entirely of Jute and is untarred, but slightly oiled; used for caulking water supply pipes so there is no possibility of the water becoming contaminated with tar; about 1¼ inches in diameter; 8 threads.

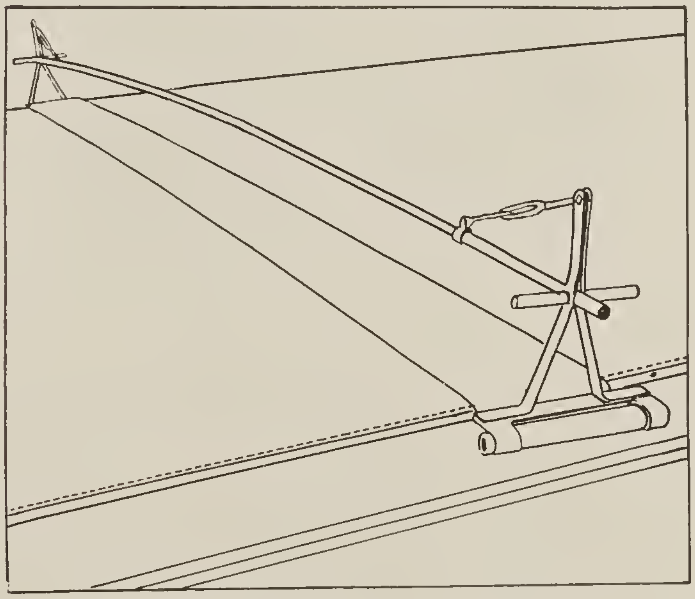
No. 2U—List price, per pound 18

Dry (unoiled) Jute Packing

Made entirely of Jute and is the same as untarred packing except that it is absolutely dry, having no oil whatever; used in connection with metalium or other substitutes for lead; about 1¼ inches in diameter; 8 threads.

No. 3D—List price, per pound 21
No. 3D5—In 5-pound coils, extra per pound 03

SPECIAL VICTOR FINISHING BELT FOR CONCRETE PAVEMENTS



Showing Finishing Belt with Belt Frame

Victor Special Finishing Belt, any length, 14" wide. Price per ft., F. O. B. Kansas City $1.00

Same belt, any width between 8" and 14". Price per ft., F. O. B. Kansas City $1.00

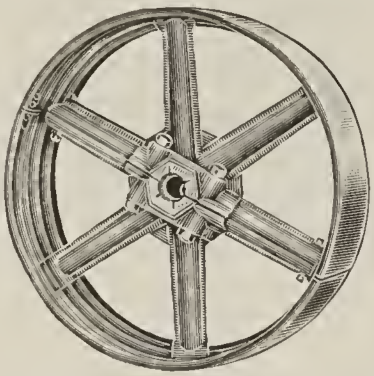
Any width 6" or less, price per ft., F. O. B. Kansas City $0.80

Belt Frame for 18′ concrete road. F. O. B. Kansas City $36.00

For each additional foot add $0.50

Three feet more of belting required than width of road. Belt may be used with or without belt frame. This belt is a 1-ply double friction rubber-covered belt of the highest quality. W recommend this especially for use on either the Lakewood or Ord finishing machines. Once you use this your men will always want it.

THE BARRY STEEL-SPLIT PULLEY



The Barry Steel Split Pulley is primarily built for strength and efficiency.

This means that.-

It is scientifically strong.

It is built entirely on the tubular principle.

It is electrically spot welded.

Scientific design and selection and distribution of material gives the Barry Pulley greater strength and durability with less weight than is found in any other steel pulley.

The tubular construction of the hub and the fillet and the method of securing the spokes to them ensure even distribution of the load throughout the entire pulley - thereby preserving the exact shape of the pulley under heavy loads.

Welding is the strongest possible means of joining metals. It obviates the necessity of any movement of the section joints rendering impossible the development of any destructive movement or "play" a common cause of trouble in pulleys of other construction. There are no rivets in a Barry Pulley to work loose or shear under strain.

The Barry Pulley is supplied with both straight and crown face in all sizes. The crown is a continuous and uniform curve. This form of crown was adopted after careful investigation of the relative merits of other methods of crowning steel pulleys, and while this curved crown is more difficult to produce than a "gable roof" crown, it presents a much better surface for belt driving. It is easier on the belt, and provides the maximum belt contact without excessive tension.

In this as in all details of the construction of the Barry Pulley, we have carefully investigated all problems which have arisen since steel pulleys were first placed on the market, and the Barry Steel Split Pulley is the result of our investigation and experience.

THE BARRY STEEL SPLIT PULLEY

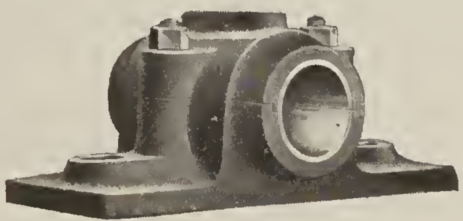
Diam. In.	Face In.	Price Each
3	3	$2.40
	4	2.52
	5	2.68
	6	3.00
4	3	2.52
	4	2.64
	5	2.75
	6	3.10
5	3	2.64
	4	2.75
	5	2.87
	6	3.25
6	2	3.15
	3	3.30
	4	3.45
	5	3.75
	6	4.05
	8	4.60
	10	5.20
	12	5.90
7	2	3.22
	3	3.38
	4	3.60
	5	3.90
	6	4.20
	8	4.80
	10	5.40
	12	6.10
8	2	3.30
	3	3.45
	4	3.75
	5	4.05
	6	4.35
	8	4.95
	10	5.60
	12	6.25
9	2	3.38
	3	3.60
	4	3.90
	5	4.20
	6	4.50
	8	5.10
	10	5.75
	12	6.35
10	2	3.45
	3	3.75
	4	4.05
	5	4.35
	6	4.65
	8	5.25
	10	5.90
	12	6.45
11	2	3.65
	3	3.90
	4	4.20
	5	4.50
	6	4.80
	8	5.40
	10	6.00
	12	6.90
12	2	3.90
	3	4.20
	4	4.63
	5	4.80
	6	5.33
	8	5.78
	10	6.45
	12	7.65
	14	9.00
	16	10.25
13	2	4.05
	3	4.35
	4	4.80
	5	5.20
	6	5.62
	8	6.43
	10	7.20
	12	8.40
	14	9.50
	16	10.75
14	2	4.20
	3	4.50
	4	5.20
	5	5.65
	6	6.15
	8	7.05
	10	8.03
	12	9.00
	14	10.00
	16	11.25
15	3	4.65
	4	5.45
	5	5.80
	6	6.55
	8	7.65
	10	8.80
	12	9.75
	14	10.75
	16	12.00
16	3	4.95
	4	5.75
	5	6.10
	6	6.90
	8	8.25
	10	9.45
	12	10.50
	14	11.50
	16	12.65
17	3	5.25
	4	6.00
	5	6.50
	6	7.28
	8	8.78
	10	10.05
	12	11.25
	14	12.40
	16	13.65
18	3	5.55
	4	6.38
	5	7.00
	6	7.65
	8	9.30
	10	10.65
	12	12.00
	14	13.25
	16	14.50
19	3	5.80
	4	6.75
	5	7.50
	6	8.25
	8	10.13
	10	11.25
	12	12.90
	14	14.20
	16	15.60
20	3	6.00
	4	7.50
	5	8.10
	6	9.00
	8	10.73
	10	12.00
	12	14.25
	14	15.30
	16	16.90
21	3	6.25
	4	8.00
	5	8.90
	6	9.60
	8	11.25
	10	12.98
	12	15.60
	14	18.00
	16	20.55
22	3	6.50
	4	8.55
	5	9.50
	6	10.28
	8	12.00
	10	14.10
	12	16.80
	14	19.50
	16	21.30
23	3	7.00
23	4	$8.70
	5	9.90
	6	10.58
	8	12.60
	10	14.75
	12	18.00
	14	21.00
	16	24.30
24	3	7.50
	4	8.90
	5	10.00
	6	10.95
	8	13.20
	10	15.68
	12	19.05
	14	22.65
	16	26.25
25	4	9.20
	6	11.45
	8	13.80
	10	16.40
	12	20.20
	14	24.50
	16	29.25
26	4	9.55
	6	11.95
	8	14.40
	10	17.10
	12	21.30
	14	26.25
	16	31.20
28	4	10.80
	6	12.90
	8	15.45
	10	18.15
	12	22.90
	14	28.50
	16	34.50
30	4	12.00
	6	14.10
	8	17.25
	10	19.90
	12	24.75
	14	31.50
	16	38.10
32	4	13.20
	6	15.45
	8	19.35
	10	22.50
	12	26.86
	14	34.15
	16	41.65
34	4	14.40
	6	17.25
	8	21.75
	10	25.50
	12	30.00
	14	36.75
	16	45.00
36	4	15.90
	6	19.50
	8	24.00
	10	28.65
	12	33.75
	14	39.75
	16	48.60
38	4	19.50
	6	21.75
	8	26.40
	10	31.05
	12	37.15
	14	42.75
	16	51.75
40	4	21.00
	6	24.00
	8	28.50
	10	33.75
	12	40.15
	14	46.50
	16	55.15
42	4	23.25
	6	26.25
	8	32.25
	10	37.50
	12	43.50
	14	50.25
	16	57.75
44	6	29.25
	8	35.62
	10	41.25
	12	4?.25
	14	54.00
	16	61.12
46	6	33.00
	8	39.00
	10	45.00
	12	50.25
	14	57.75
	16	64.50
48	6	36.75
	8	42.00
	10	48.75
	12	54.00
	14	61.50
	16	67.50
	18	75.00
	20	87.00

Write For Our Latest Discount Sheet Showing Net Prices On Above.

THE BARRY STEEL SPLIT PULLEY (Continued)

Diam. In.	Face In.	Price Each
	22	99.00
	24	111.00
50	6	40.87
	8	47.25
	10	53.25
	12	58.50
	14	66.00
	16	75.00
	18	84.00
	20	96.00
	22	108.00
	24	120.00
52	6	46.50
	8	51.00
	10	57.00
	12	63.00
	14	69.00
	16	78.75
	18	90.00
	20	102.00
	22	114.00
	24	126.00
54	6	50.25
	8	56.25
	10	61.50
	12	67.50
	14	74.25
	16	83.25
	18	96.75
	20	108.75
	22	120.75
	24	132.75
56	6	54.00
	8	60.75
	10	66.75
	12	72.75
	14	80.25
	16	90.00
	18	104.25
	20	119.25
	22	134.25
	24	149.25
58	6	60.00
	8	65.25
	10	71.25
	12	78.37
	14	86.62
	16	96.37
	18	110.62
	20	125.62
	22	140.62
	24	155.62
60	6	8.75
	8	70.50
	10	77.25
	12	84.00
	14	93.00
	16	102.75
	18	117.00
	20	132.00
	22	147.00
	24	162.00
62	8	72.85
	10	84.30
	12	95.95
	14	107.55
	16	119.95
	18	132.30
	20	144.85
	22	185.80
	24	201.65
64	8	76.50
	10	88.20
	12	100.10
	14	111.95
	16	124.60
	18	137.20
	20	150.00
	22	197.10
	24	210.20
66	8	80.25
	10	92.20
	12	104.35
	14	116.45
	16	129.35
	18	142.20
	20	155.30
	22	205.55
	24	218.95
68	8	84.15
	10	96.35
	12	108.75
	14	121.10
	16	134.25
	18	147.40
	20	160.80
	22	214.30
	24	227.95
70	8	88.10
	10	100.70
	12	113.55
	14	126.35
	16	139.95
	18	153.60
	20	167.60
	22	223.70
	24	237.85
72	8	92.15
	10	105.05
	12	118.15
	14	131.30
	16	145.40
	18	159.65
	20	174.30
	22	232.90
	24	247.35

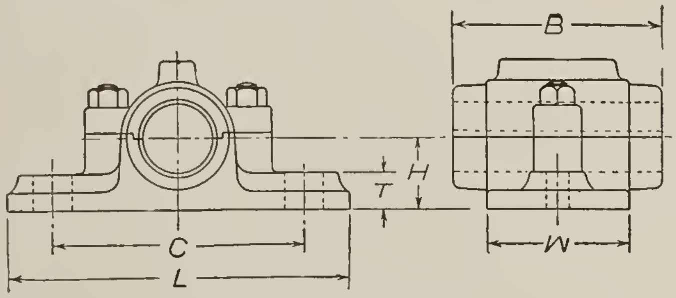
BARRY STANDARD PILLOW BLOCKS



Standard Pillow Blocks

This is a properly proportioned and well made bearing, and will take care of any work which a bearing of this sort is designed to perform.

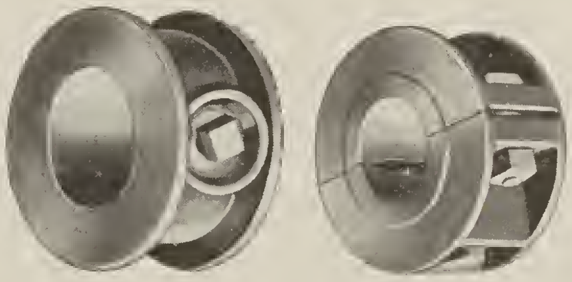
Lubrication is provided for by means of a reservoir in the cap, as shown in the cut.



Standard Pillow Blocks
Price List and Dimensions in Inches

Shaft Sizes	Price List	B	L	W	T	C	H	Bolts Required
15/16	$1.30	3	4¾	2	½	3½	1	2—½″
1 3/16	1.60	3¾	6	2½	⅝	4⅜	1¼	2—½″
1 5/16	1.75	4	6	2½	⅝	4⅜	1¼	2—½″
1 7/16	2.10	4½	7	3	¾	5¼	1½	2—½″
1 11/16	2.70	5¼	8¼	3½	⅞	6⅛	1¾	2—½″
1 15/16	3.70	6	9½	4	1	7	2	2—⅝″
2 3/16	4.60	6¾	10¾	4½	1⅛	7⅞	2¼	2—⅝″
2 7/16	5.50	7½	12	5	1¼	8¾	2½	2—¾″
2 11/16	7.00	8¼	13	5½	1⅜	9⅝	2¾	2—¾″
2 15/16	8.80	9	14¼	6	1½	10½	3	2—⅞″
3 3/16	11.00	9¾	15½	6½	1⅝	11⅜	3¼	2—⅞″
3 7/16	12.80	10½	16¾	7	1¾	12¼	3½	2—⅞″
3 11/16	14.40	11¼	17¾	7½	1⅞	13⅛	3¾	2—1″
3 15/16	16.00	12	19	8	2	14	4	2—1⅛″

BARRY SAFETY SET COLLARS



Solid Split

Barry Safety Set Collars

These collars fulfill all conditions required by Factory Law, having no projecting set screws and bolts. They are bored and reamed to size and faced on ends.

SOLID				SPLIT			
Shaft Size in Inches	List Prices	Diam. Inches	Width Inches	Shaft Size in Inches	List Prices	Diam. Inches	Width Inches
15/16	$ .65	2 7/16	1⅜				
1 3/16	.80	2 7/16	1⅜	1 3/16	$1.20	3⅛	1⅜
1 7/16	1.00	3⅛	1⅝	1 7/16	1 50	3⅜	1⅝
1 11/16	1.20	3⅜	1⅝	1 11/16	1.80	3⅝	1⅝
1 15/16	1.40	3⅝	1⅝	1 15/16	2 10	3⅞	1⅝
2 3/16	1.60	3 15/16	1⅞	2 3/16	2.40	4 11/16	1⅞
2 7/16	1.80	4½	1⅞	2 7/16	2.70	4 15/16	1⅞
2 11/16	2.10	4¾	1⅞	2 11/16	3 15	5 3/16	1⅞
2 15/16	2.40	5	1⅞	2 15/16	3.60	5 7/16	1⅞
3 3/16	2.70	5¼	2	3 3/16	4.05	5 11/16	2
3 7/16	3.00	5½	2	3 7/16	4.50	5 15/16	2
3 11/16	3.30	5¾	2¼	3 11/16	4.95	6⅝	2¼
3 15/16	3 60	6	2¼	3 15/16	5.40	7	2¼

HOW TO ORDER PULLEYS

To ensure orders being filled correctly, first give diameter required, second, the width of face, and third, shaft size. Also state whether pulleys are to be supplied with straight or crown face.

Unless specified, pulleys are always furnished with crown face.

When a shifting belt is used to drive tight and loose pulleys, the face of the driving pulley must be straight. Tight and loose pulleys are always supplied with crown face.

It is important to give the correct diameter of the shaft to avoid troublesome errors.

Examples Showing How Diameter and Speed of Pulleys Are Obtained

TO FIND DIAMETER OF DRIVEN, the following given:
Diameter Driver, 30″.
Revolutions of Driver, 150.
Revolutions of Driven, 225.
30×150=4500.
4500÷225=20″, diameter of the driven pulley.

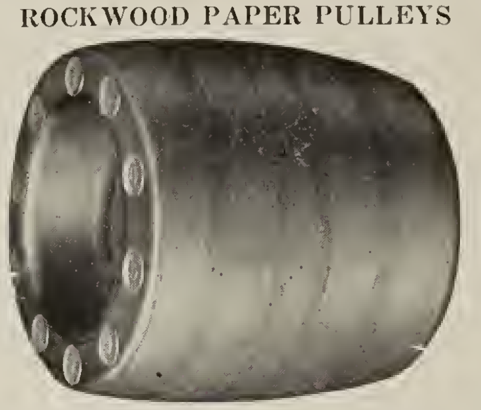
TO FIND DIAMETER OF DRIVER, the following given:
Diameter Driven, 20″.
Revolutions of Driven, 225.
Revolutions of Driver, 150.
20×225=4500.
4500÷150=30″, diameter of the driving pulley.

TO FIND REVOLUTIONS OF DRIVER, the following given:
Diameter Driven, 20″.
Revolutions per Minute of Driven, 225.

20×225=4500.
4500÷30=150, revolutions per minute of Driver.

TO FIND REVOLUTIONS OF DRIVEN, the following given:
Diameter of Driver, 30.
Revolutions per Minute of Driver, 150.
Diameter of Driven, 20.
30×150=4500.
4500÷20=225, revolutions per minute of Driven.

ROCKWOOD PAPER PULLEYS



Rockwood Paper Pulleys are for use on electric motors, generators, drop hammers, grinders, pulverizers, pumps and other belted machinery.

The use of these pulleys results directly in economy through the greater transmission of power. The high coefficient of friction may be taken advantage of in any one of the following ways: Reduced belt slippage, decreased belt tension, greater power transmission, lower cost of pulleys and belting. The lighter tension on the belt reduces all strains, permitting lighter shafting, hangers, etc., and reduces consumption of oil and trouble resulting from hot bearings. There being minimum slippage of the belt, wear is decreased, and the item of belts in the expense account will be materially reduced.

Rockwood Paper Pulleys may be relied upon to transmit all the power a belt will carry without a tightener, the belt (not the pulley) being the limit. Furthermore, they are not injured by steam or atmospheric conditions, and are guaranteed to give entirely satisfactory service.

LIST PRICES—ROCKWOOD PAPER PULLEYS

(Made up to 72-inch diameter and in all face widths. Prices of large sizes on application)

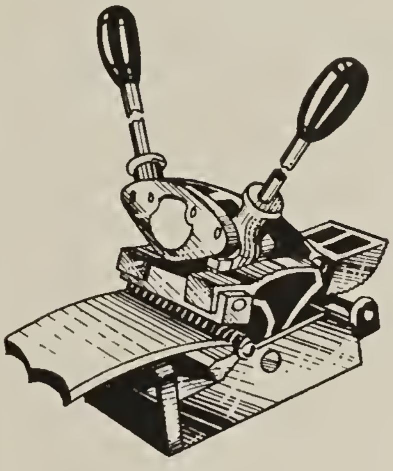
TOTAL FACE WIDTH } For fractional dimensions use nearest list. Dimensions 1-2 inch and larger take next higher list. See below for recommended allowance over belt width

DIAM	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	2 00	2 05	2 10	2 20	2 35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2½	2 05	2 10	2 15	2 25	2 40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	2 10	2 15	2 20	2 30	2 45	2 65	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3½	2 15	2 20	2 25	2 35	2 50	2 70	2 95	.....	.....	.....	.....	.....	←««EXTRA HEAVY CONSTRUCTION FOR BELTS OVER 12 INCHES WIDE														.....	.....	.....
4	2 20	2 25	2 30	2 40	2 55	2 75	3 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4½	2 25	2 30	2 35	2 45	2 60	2 80	3 05	3 35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5	2 30	2 35	2 40	2 50	2 65	2 85	3 10	3 40	3 75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5½	2 35	2 40	2 45	2 55	2 70	2 90	3 15	3 45	3 80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	.....	3 05	3 15	3 25	3 45	3 70	4 00	4 40	4 80	5 30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7	.....	3 20	3 25	3 40	3 55	3 80	4 15	4 50	4 95	5 45	6 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8	.....	3 40	3 45	3 55	3 75	4 00	4 30	4 70	5 10	5 60	6 20	6 90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9	.....	3 55	3 65	3 75	3 95	4 20	4 50	4 90	5 30	5 80	6 40	7 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	.....	3 75	3 80	3 95	4 15	4 40	4 70	5 05	5 50	6 00	6 55	8 10	9 45	10 35	11 35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11	.....	4 00	4 15	4 30	4 55	4 90	5 25	5 70	6 20	6 75	7 40	8 70	10 55	11 55	12 60	13 75	14 95	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	.....	4 25	4 45	4 70	5 00	5 40	5 80	6 30	6 90	7 50	8 20	9 30	11 70	12 75	13 85	15 10	16 35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	.....	4 50	4 75	5 05	5 45	5 90	6 40	6 95	7 55	8 25	9 00	9 90	12 80	13 95	15 20	16 45	17 60	19 20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14	.....	4 75	5 00	5 30	5 70	6 10	6 60	7 20	7 80	8 50	9 25	10 50	13 15	14 25	15 50	16 75	17 75	19 50	21 00	22 60	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	.....	5 00	5 30	5 70	6 10	6 60	7 20	7 80	8 50	9 25	10 05	11 20	14 30	15 45	16 75	18 10	19 20	21 00	22 60	24 25	25 95	.....	.....	.....	.....	.....	.....	.....	.....
16	.....	5 30	5 70	6 10	6 60	7 20	7 80	8 50	9 25	10 05	10 95	11 90	15 60	16 75	18 05	19 50	21 00	22 60	24 20	25 95	27 75	29 65	31 60	.....	.....	.....	.....	.....	.....
17	.....	5 65	6 05	6 55	7 10	7 75	8 45	9 20	10 00	10 90	11 80	12 80	16 70	18 00	19 45	20 95	22 50	24 15	25 90	27 70	29 55	31 50	33 55	35 65	37 80	.....	.....	.....	.....
18	.....	5 95	6 45	7 00	7 60	8 30	9 05	9 90	10 75	11 70	12 70	13 75	17 90	19 30	20 75	22 35	24 00	25 75	27 55	29 40	31 25	33 40	35 50	37 65	39 90	42 25	.....	.....	.....
19	.....	.....	6 75	7 35	7 95	8 65	9 10	10 20	11 05	12 00	13 00	14 05	18 25	19 65	21 15	22 75	24 40	26 10	27 90	29 80	31 75	33 75	35 85	38 05	40 30	42 60	45 00	.....	.....
20	.....	.....	7 15	7 75	8 45	9 20	10 00	10 90	11 85	12 80	13 90	15 00	19 45	20 95	22 50	24 15	25 90	27 70	29 55	31 50	33 55	35 65	37 80	40 05	42 40	44 80	47 25	49 80	52 45
21	.....	.....	7 55	8 25	9 00	9 80	10 70	11 60	12 60	13 70	14 80	16 00	20 70	22 30	23 95	25 65	27 45	29 35	31 25	33 30	35 40	37 60	39 85	42 15	44 55	47 05	49 60	52 20	54 90
22	.....	.....	8 00	8 75	9 55	10 45	11 40	12 40	13 45	14 55	15 75	17 00	21 95	23 65	25 30	27 15	29 00	31 05	33 00	35 10	37 30	39 55	41 85	44 25	46 75	49 30	51 90	54 60	57 40
23	.....	.....	8 45	9 25	10 10	11 05	12 05	13 10	14 25	15 45	16 70	18 00	23 30	25 00	26 75	28 65	30 60	32 65	34 75	36 90	39 15	41 50	43 90	46 35	48 90	51 55	54 25	57 00	59 85
24	.....	.....	8 80	9 60	10 50	11 45	12 45	13 50	14 60	15 80	17 05	18 40	23 70	25 45	27 25	29 10	31 05	33 10	35 20	37 35	39 60	41 95	44 30	46 80	49 35	52 00	54 70	57 45	60 30
25	.....	.....	9 25	10 10	11 05	12 05	13 10	14 25	15 45	16 70	18 00	19 40	24 95	26 80	28 70	30 60	32 65	34 75	36 90	39 15	41 50	43 90	46 35	48 90	51 55	54 25	57 00	59 85	62 80
26	.....	.....	9 75	10 70	11 70	12 45	13 90	15 05	16 30	17 60	19 00	20 45	26 35	28 20	30 10	32 20	34 30	36 45	38 70	41 05	43 42	45 90	48 45	51 10	53 80	56 55	59 40	62 35	65 35
27	.....	.....	10 25	11 25	12 30	13 45	14 60	15 90	17 20	18 55	20 00	21 50	27 65	29 65	31 70	33 75	35 90	38 20	40 50	42 90	45 40	47 95	50 55	53 25	56 05	58 90	61 80	64 80	67 90
28	.....	.....	.....	11 80	12 95	14 10	15 40	16 70	18 05	19 50	21 00	22 55	29 05	31 05	33 10	35 35	37 60	39 90	42 30	44 80	47 30	49 95	52 65	55 45	58 30	61 20	64 20	67 30	70 45
29	.....	.....	.....	12 25	13 40	14 55	15 80	17 10	18 50	19 95	21 45	23 00	29 50	31 60	33 65	35 65	38 10	40 45	42 85	45 35	47 85	50 50	53 15	55 95	58 80	61 75	64 75	67 80	70 95
30	.....	.....	.....	12 80	14 00	15 25	16 55	17 95	19 40	20 90	22 45	24 05	30 90	33 00	35 15	37 35	39 75	42 15	44 65	47 20	49 80	52 50	55 30	58 15	61 05	64 05	67 15	70 30	73 50
31	.....	.....	.....	13 45	14 60	16 00	17 40	18 80	20 30	21 90	23 50	25 20	32 35	34 50	36 70	39 10	41 50	43 95	46 50	49 15	51 85	54 60	57 45	60 40	63 40	66 45	69 60	72 85	76 15
32	.....	.....	.....	14 05	15 40	16 75	18 20	19 70	21 25	22 90	24 55	26 30	33 70	36 00	38 35	40 75	43 20	45 75	48 40	51 10	53 85	56 70	59 65	62 65	65 70	68 65	72 10	75 40	78 75
33	.....	.....	.....	14 70	16 05	17 50	19 00	20 55	22 20	23 90	25 60	27 45	35 15	37 50	39 90	42 40	44 95	47 55	50 25	53 05	55 90	58 80	61 80	64 90	68 00	71 25	74 55	77 95	81 40
34	.....	.....	.....	15 20	16 55	18 00	19 50	21 05	22 70	24 40	26 10	27 95	35 75	38 10	40 60	43 00	45 55	48 15	50 85	53 65	56 50	59 40	62 40	65 50	68 65	71 85	75 15	78 55	82 00
35	.....	.....	.....	15 80	17 25	18 75	20 30	21 95	23 60	25 40	27 20	29 05	37 20	39 60	42 05	44 65	47 25	49 95	52 75	55 60	58 50	61 50	64 60	67 75	70 95	74 25	77 65	81 10	84 60
36	.....	.....	.....	16 50	18 00	19 55	21 20	22 90	24 60	26 45	28 20	30 25	38 70	41 20	43 75	46 35	49 05	51 85	54 70	57 60	60 60	63 70	66 85	70 05	73 35	76 75	80 20	83 70	87 30
37	.....	.....	.....	17 20	18 75	20 50	22 05	23 80	25 65	27 50	29 45	31 45	40 20	42 75	45 40	48 10	50 85	53 70	56 65	59 65	62 70	65 85	69 10	72 35	75 75	79 20	82 75	86 35	90 00
38	.....	.....	.....	17 90	19 50	21 10	22 95	24 75	26 60	28 55	30 55	32 65	41 70	44 35	47 05	49 80	52 65	55 60	58 60	61 65	64 60	68 05	71 35	74 70	78 15	81 70	85 30	88 95	92 70
39	.....	.....	.....	18 45	20 05	21 75	23 50	25 30	27 20	29 15	31 15	33 20	42 40	45 00	47 70	50 45	53 35	56 25	59 25	62 35	65 50	68 70	72 00	75 40	78 85	82 35	85 95	89 65	93 40
40	.....	.....	.....	19 10	20 80	22 55	24 40	26 25	28 20	30 10	32 25	34 40	43 90	46 60	49 20	52 20	55 15	58 15	61 20	64 35	67 60	70 90	74 25	77 70	81 25	84 65	88 50	92 25	96 10
41	.....	.....	.....	19 90	21 65	23 45	25 30	27 25	29 25	31 30	33 45	35 65	45 45	48 25	51 10	54 00	57 00	60 10	63 25	66 45	69 75	73 15	76 60	80 10	81 70	87 40	91 15	94 95	98 85
42	.....	.....	.....	20 60	22 45	24 30	26 25	28 25	30 25	32 45	34 60	36 90	47 05	49 90	52 80	55 80	58 90	62 05	65 25	68 55	71 90	75 40	78 90	82 50	86 20	89 95	93 75	97 65	101 65
43	.....	.....	.....	.....	23 25	25 20	27 20	29 25	31 40	33 55	35 80	38 15	48 60	51 55	54 55	57 60	60 75	64 00	67 30	70 65	74 10	77 65	81 25	84 90	88 65	92 50	96 40	100 35	104 40
44	.....	.....	.....	.....	23 90	25 80	27 80	29 90	32 00	34 20	36 45	38 75	49 85	52 30	55 30	58 35	61 50	64 75	68 50	71 40	74 85	78 40	82 00	85 65	89 40	93 25	96 25	101 10	105 15
45	.....	.....	.....	.....	24 70	26 70	28 75	30 90	33 05	35 30	37 65	40 00	50 95	53 95	57 00	60 15	61 40	66 70	70 05	73 50	77 05	80 65	84 30	88 05	91 90	95 80	99 75	103 80	107 95
46	.....	.....	.....	.....	25 55	27 60	29 75	31 95	34 20	36 50	38 90	41 30	52 60	55 65	58 80	62 05	65 35	68 70	72 15	75 70	79 30	82 95	86 70	90 55	94 45	98 40	102 45	106 60	110 80
47	.....	.....	.....	.....	26 45	28 55	30 75	33 00	35 30	37 70	40 15	42 65	54 25	57 40	60 60	63 90	67 30	70 75	74 25	77 85	81 55	85 30	89 10	93 00	97 00	101 05	105 15	109 35	113 65
48	.....	.....	.....	.....	28 55	30 75	33 00	35 30	37 70	40 15	42 65	45 20	57 40	60 60	63 90	67 30	70 75	74 25	77 85	81 55	85 30	89 10	93 00	97 00	101 05	105 15	109 35	113 65	118 00
49	.....	.....	.....	.....	29 25	31 45	33 70	36 00	38 40	40 80	43 30	45 90	58 20	61 45	64 75	68 10	71 55	75 10	78 70	82 35	86 10	89 95	93 85	97 80	101 85	106 00	110 20	114 45	118 80
50	.....	.....	.....	.....	30 15	32 40	34 70	37 05	39 50	42 00	44 55	47 20	59 85	63 15	66 55	70 00	73 50	77 10	80 80	84 55	88 35	92 25	96 25	100 30	104 40	108 60	112 90	117 25	121 65

BELT WIDTHS } To allow for travel of the belt and slight rounding of the edges of the rims, total face widths of pulleys should exceed belt widths in amounts as below. Orders should designate whether dimensions are for belt widths or total face widths

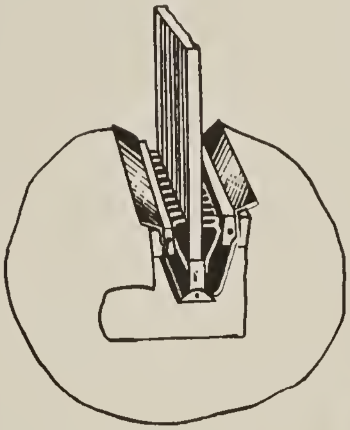
Width of Belt	1	1½	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Total Face Width	Add ¼ in.		Add ½ inch				Add ¾ inch				Add 1 inch														Add 1½ Inches								

"CLIPPER" BELT LACERS



For belts of any width, not exceeding ⅜-inch thick. Suitable for every kind of belting—leather, rubber, canvas, fabric, etc. Weight 24 pounds.

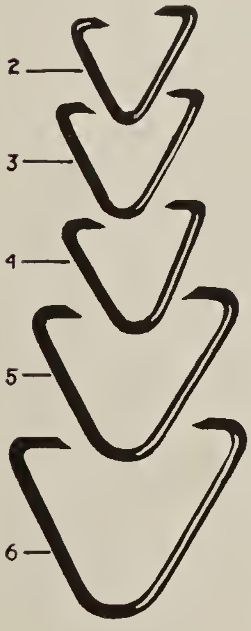
Price, No. 3, Ready for use, Each $40.00



For use in any ordinary vise, will lace belts up to 4 inches in one operation, wider belts in two or more operations. Weight 2 pounds.

Price, No. 0, Ready for use $7.00

"CLIPPER" BELT HOOKS



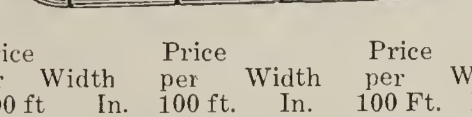
Selection of size determined by thickness of belt.

Price, No. 2, for Thin Belts Over Small Size Pulley . . per box $0.95
Price, No. 3, for Thin Belts Over Medium Sized Pulley . per box 1.00
Medium Size Pulley per box 1.00
Price, No. 4, for Belts not Over ¼-inch Thick per box 1.00
Price, No. 5, for Belts not Over 5/16-inch Thick . . . . . . per box 1.15
Price No. 6, for Belts not Over ⅜-inch Thick . . . . . per box 1.50

10% discount on single purchases of 25 boxes or more.

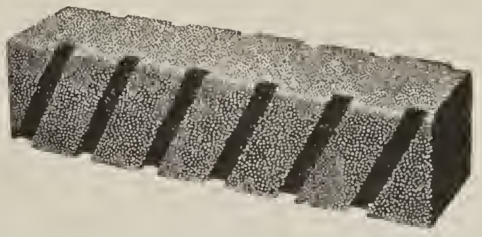
CUT LACING

This is made tanned or rawhide



Width In.	Price per 100 ft	Width In.	Price per 100 ft.	Width In.	Price per 100 Ft.	Width In.	Price per 100 ft.
¼	$2.50	⅜	$3.75	½	$5.50	¾	$7.50
5/16	3.00	7/16	4.50	⅝	6.50..	....	....

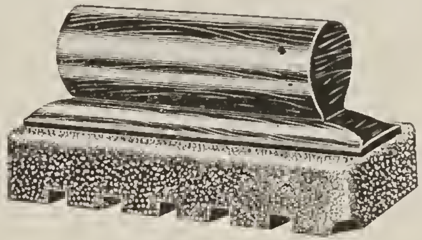
PLAIN AND FLUTED CARBORUNDUM RUBBING BRICKS



For concrete work, dressing granite, tile, marble, terrazzo work, removing mould marks, cleaning forms and molds.

Size, inches	4x2x2	6x2x2	8x3x3
Plain Brick	$1.20	$1.70	$4.50
Fluted Brick	1.20	1.70	4.50

FLUTED BRICK WITH HANDLE

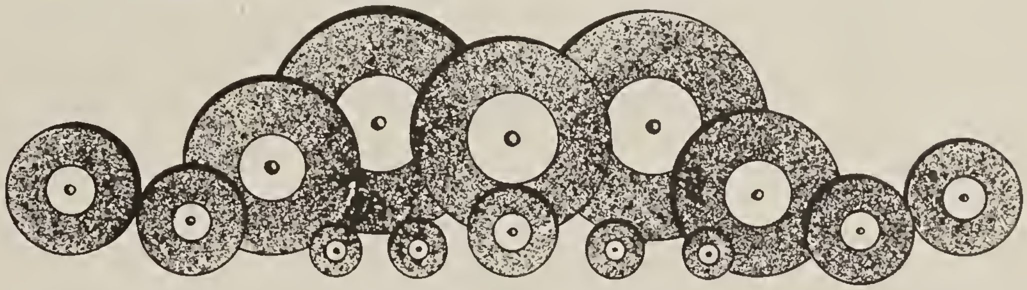


8x3½x1½

Price, each $4.00

When ordering, specify either fine, medium or coarse.

CARBORUNDUM AND ALOXITE GRINDING WHEELS



Carborundum is recommended for materials of low tensile strength such as cast iron, brass, bronze, aluminum, copper, etc., and for the grinding of such materials as rubber, pearl, marble and stone.

Aloxite is used for the grinding of steels and their alloys, for malleables and the majority of tool room grinding operations.

A booklet giving general recommendations of grits and grades of Carborundum and Aloxite wheels for all classes of grinding will be sent upon request. In the selection of grinding wheels it is suggested that you avail yourself of the advice and services of our representatives.

In order to avoid delay in shipment of grinding wheels, as well as to insure accuracy in the filling of orders, it is advisabde that you give as complete information as is possible regarding the grinding conditions which the wheel will be called upon to meet.

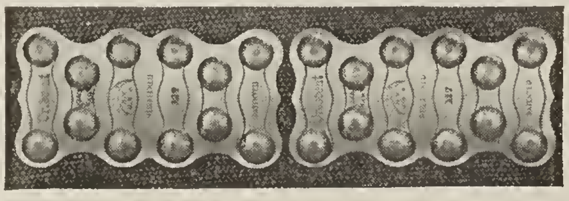
We carry a complete stock of both Carborundum and Aloxite wheels in various sizes, grits and grades to meet the popular demand.

Write for complete Carborundum catalog containing valuable grinding wheel information, also all standard types of grinding wheels for the various types and makes of grinding equipment.

CRESCENT BELT FASTENER PLATES

Crescent Short Grip, for Light Work

The patented metallic Crescent plates are re-enforced in construction and curved to fit the pulleys. The tight, snug hug of the Crescent joint on the pulleys gives uninterrupted, close adhesion and full transmission of all power.



Crescent Medium Grip, for General Work

Crescent plates are attached to belt with special self-piercing Crescent rivets, which merely separate but do not cut the lengthwise, power-carrying belt fibers. Unlike lace leather, wire lace or other methods, Crescent belt fasteners do not remove any material, but preserve the full strength of the belt for the life of the belt.

Crescent Long Grip, for Heavy Work

The illustration shows how the strain is equally distributed across the entire width of the belt, thus maintaining the maximum strength.

On the pulley side the finished joint is smooth, with the prongs of the Crescent Rivet imbedded firmly in the belt. No metal contacts with the pulley to wear or cause noise.

The illustrations above are considerably reduced and are not in proportionate sizes to each other.

Crescent Short Grip Plates for Light Work

Pulleys Three-inch Diameter or Larger

No.	For Belt Widths, Inches	Price per Gross	No.	For Belt Widths Inches	Price per Gross
25	¾–1	$2.88	85	2½	$11.52
45	1½	5.76	805	3	11.52
65	2	8.64	...	...	.....

Pulleys Six-inch Diameter or Larger.

Crescent Medium Grip Plates for General Work

67	1½	$8.64	107	3	$14.40
607	2	8.64	127	3½	17.28
87	2½	11.52	147	4	20.16

Crescent Special Grip Plates for General Work

Pulleys nine-inch Diameter or Larger.

63	2	$11.52	103	3	$17.28
83	2½	14.40	123	3½	20.16

Crescent Long Grip Plates for Heavy Work

Pulleys Twelve-inch Diameter or Larger.

109	2½	$17.28	1409	3½	$25.92
149	3	23.04	189	4	28.80

Crescent High Speed Plates for Light Work

Pulleys two-inch Diameter or Larger.

20	¾–1	$2.88	44	1¼	$ 5.76
40	1	5.76	60	2	8.64
66	1½–6	8.64	..	...	.....

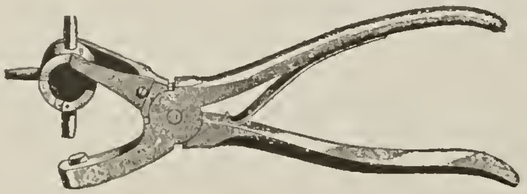
Crescent Jumbo Plates For Extra Heavy Work

Pulleys 4-inch Diameter or Larger.

1611	3	$28.80	2211	4	$34.56

For wider belts use two or more Crescent Plates of same grip.

SPRING PUNCHES

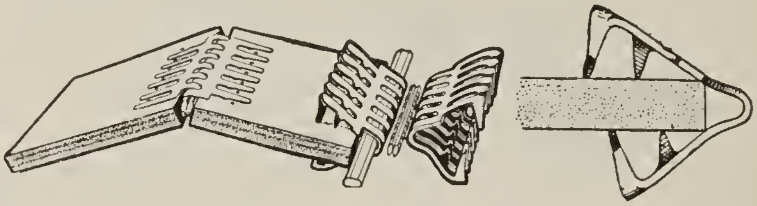


Revolving; forged steel frame and turret; polished drive tubes; copper plug; flat steel spring riveted to handle. Four tubes, assorted sizes, 4, 6, 8 and 10, length 8 inches No. 26—List price, each $1.50

ALLIGATOR STEEL BELT LACING

The Alligator steel belt lacing is a smooth separable hinge joint of extreme strength which protects the ends of fabric belts and allows any belt to be used with an idler pulley.

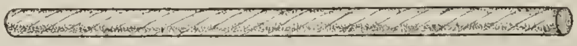
In a working time of only three minutes the average belt can be laced with the Alligator Lacing. No special skill or training is needed. Anyone can repair a break in almost no time at all. A hammer is all that is required.



Lacing No.	Thickness of Belt Inches	Will Join in Width Inches	Length Section Inches	Price per Box
00	Up to 1/16	72	6	$2.60
1	1/16 to 3/32	42	6	1.70
15	⅛ to 5/32	64	8	2.60
20	5/32 to 3/16	60	12	2.60
F 25	3/16 to 7/32	48	8	2.50
G 25	3/16 to 7/32	96	12	5.00
L 27	¼ to 9/32	96	12	5.30
M35	9/32 to 5/16	32	8	2.30
N 35	9/32 to 5/16	48	12	3.40
U 45	5/16 to ⅜	48	12	4.50
W55	⅜ to 7/16	48	12	5.20
X 65	7/16 to ½	48	12	6.00
75	½ to ⅝	48	12	8.80

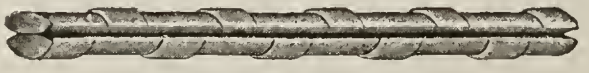
Sizes Nos. 75, 65 and 55 are packed only with sectional steel rocker hinge pins. Sizes Nos. 45, 35, 27 and 20 are packed regularly with rocker hinge pins, but can be had with rawhide pins only if so specified. Sizes Nos. 15, 1 and 00 are packed only with rawhide hinge pins.

Extra Hinge Pins That Can be Cut to Suit



Twisted Rawhide Pins

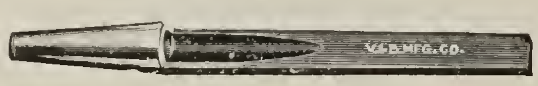
Size Pin Inches	For Lacing No.	Length, Lacing, Inches	Price per Doz.
No. 00	00	6	$0.40
1/16	1	6	.40
3/32	15	8	.60
⅛	20 and 25	8	.60
⅛	20 and 25	12	.90
9/64	27	12	1.00
5/32	35	8	.70
5/32	35	12	1.00
3/16	45	12	1.20



Sectional Steel Rocker Pins

Size Pin Inches	For Lacing No.	Length, Lacing, Inches	Price per Doz.
No. 25	20 and 25	12	$0.90
27	27	12	1.00
35	35	12	1.00
45	45	12	1.20
65	55 and 65	12	1.40
75	75	12	1.70

SADDLERS' PUNCHES

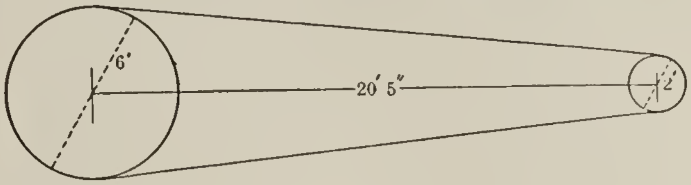


Forged Steel, Tempered Point, Polished

Nos.	1	2	3	4	5	6
List price, each	Nos. 1 to 6					$0.20
Nos.	7	8	9	10	12	
List price, each	.25	.25	.25	.30	.30	

Rules for Measuring Belts

For Finding Length of Straight Belts



Rule 1

A.—Multiply one-half the sum of the diameters of the pulleys by 3⅐.

B.—Add to above twice the distance between centers.

C.—If one pulley is much larger than the other, it is necessary to add to the above a sum varying from one to ten or twelve inches, or more, and obtained by the following method: Square the difference in the diameters in pulleys in inches and divide by four times the distance between centers in inches.

Example

Large pulley, 58″.
Small pulley, 12″.
Distance between centers, 10′ =120″.
To find A—58″+12″ =70″; 70″×½ =35″; 35″×3⅐ = 110″.
To find B—10′ =120″; 2×120′ =240′.
To find C—58″—12″ =46″.
46″ squared =2116″
4 times distance between centers is 4×120″ =480″
2116″ divided by 480 =5″ approximately.
Total length A+B+C =110″+240″+5″ =29′ 7″, answer.

For Finding Length of Cross Belts
Rule 2

A.—Multiply one-half the sum of the diameters of the pulleys by 3⅐.

B.—Square one-half the sum of the diameters of the pulleys. Square the distance between centers. Add these two squares and take the square root. Multiply this by 2 and add to the result found in paragraph A.

Example

Large pulley, 58″.
Small pulley, 12″.
Distance between centers, 10′ =120″
To find A—Same as Rule 1 =110″.
To find B—Half the sum of the diameters of the pulleys =35″.
Square 35″ =1225″.
Square distance between centers (120″) =14400″.
Add 1225″ and 14400″ =15625″.
The square root of 15625″ =125″.
Twice 125″ =250″.
A+B =110″+250″ =360″ =30′, answer.

Rule for Measuring Belts in the Roll

Add to the diameter of the roll in inches the diameter of the hole in the center of the roll. Multiply this sum by the number of coils in the roll, and multiply this product by 1.32. The three figures on the left represent number of feet in roll.

Example

Roll of 5-inch single leather belt measures 37⅝ inches in diameter; hole, 4⅝ inches in diameter; number of coils in roll, 84:
37⅝+4⅝ =42¼×84 =3,549×1.32 =468,468; or (taking the first three figures on the left) equals 468½ feet
Length of roll by actual measurement, 469 feet

Rules for Piecing out Belts

In order to calculate the changed length of belt when different size pulley is put on in place of one removed, take out of the belt, or put in one and a half times the difference of the diameter of the pulleys.

Example: Take off a 20-inch pulley and put on a 24-inch —20-inch×1½-inch =6-inch of a new belt to the existing one.

Rule for Finding Width of Belts

When Speed of Belt in Feet per Minute and Horse Power Wanted are Given

For Single Belts—Divide the speed of belt by 8. The horse power wanted divided by this quotient will give the width of belt required.

Example—Required the width of single belt to transmit 100 horse power. Engine pulley 72 inches in diameter; speed of engine, 220 revolutions per minute.
8)4144 (speed of belt per minute).
518)100_{00} (horse power wanted).
19 inches (width of belt required).

For Double Belts—Divide the speed of belt in feet per minute by 56. Divide the horse power wanted by this quotient for the width of belt required.

Example—Required the width of double belt to transmit 500 horse power. Engine pulley, 72 inches in diameter; speed of engine, 220 revolutions per minute.
56)4144 (speed of belt per minute).
74)500_{00} (horse power wanted)
67½ inches (width of belt required).

Tension

More belts and machinery are injured by lack of proper understanding of this subject, than by any other cause. Vertical belts require extra (not excessive) tension, as it is necessary to obtain sufficient friction on the lower pulley. As far as possible avoid vertical transmission.

There are no absolute rules on this subject, as the conditions under which belts are used vary in many respects. From observation made by engineers we suggest the following schedule:

No. of Plies	Tension, Lbs. per Inch of Width of Belt	No. of Plies	Tension, Lbs. per Inch of Width of Belt	No. of Plies	Tension, Lbs. per Inch of Width of Belt
3	30 to 40	5	70 to 90	7	110 to 130
4	50 " 70	6	90 " 110	8	130 " 150

Care should be taken that the tension is never sufficient to heat the bearings. Excessive tension is injurious.

Horse Power Transmitted by Leather Belts

Driving Power of Single Belts

Speed, Feet per Min.	Width of Belt, Inches 2	3	4	5	6	8	10	12	14
400	1	1½	2	2½	3	4	5	6	7
600	1½	2¼	3	3¾	4½	6	7½	9	10½
800	2	3	4	5	6	8	10	12	14
1000	2½	3¾	5	6¼	7½	10	12½	15	17½
1200	3	4½	7	7½	9	12	15	18	21
1500	3¾	5¾	7½	9½	11½	15	18¾	22½	26½
1800	4½	6¾	9	11¼	13½	18	22½	27	31½
2000	5	7½	10	12½	15	20	25	30	35
2400	6	9	12	15	18	24	30	36	42
2800	7	10½	14	17½	21	28	35	42	49
3000	7½	11¼	15	18¾	22½	30	37½	45	52½
3500	8¾	13	17½	22	26	35	44	52½	61
4000	10	15	20	25	30	40	50	60	70
4500	11¼	17	22½	28	34	45	57	69	78
5000	12½	19	25	31	37½	50	62½	75	87

Driving Power of Double Belts

Speed, Feet per Min.	Width of Belt, Inches 6	8	10	12	14	16	18	20	24
400	4¼	5¾	7¼	8½	10	11½	13	14½	17½
600	6½	8¾	11	13	15	17½	19½	22	26
800	8½	11½	14½	17½	20½	23	26	29	34½
1000	11	14½	18¼	21½	25½	29	32½	36	43½
1200	13	17½	22	26	30½	34½	39	44	52½
1500	16¼	21¾	27¼	32½	38	43½	49	54½	65½
1800	19½	26	32¾	39	45½	52	59	65½	78½
2000	21¾	29	36½	43½	50½	58	65½	72½	87
2400	26	34¾	44	52½	60½	69½	78½	88	105
2800	30½	40½	51	61	71	81	91½	102	122
3000	32½	43½	54½	65½	76	87½	98	108	131
3500	38	50¾	63½	76	89	101	114	127	153
4000	43½	58¼	72¾	87	101	116	131	145	174
4500	49	65	82	98	114	131	147	163	196
5000	54½	72¾	91	109	127	145	163	182	218

TRANSMISSION BELTS (General Recommendations

Belts should not be run so loose that they slip, nor so tight as to place undue strain upon them or upon the pulleys.

To obtain best results, small pulleys carrying narrow belts should be about 16 feet from center to center, medium pulleys carrying belts of medium weight about 20 feet from center to center, and large pulleys carrying large belts about 30 feet from center to center. Belts for these pulleys should sag in motion about 1½", 3" and 4½" respectively.

Avoid vertical drives, slanting the belt whenever possible to do so. A vertical drive is not as efficient as one that is horizontal, for the reason that the weight of the belt itself tends to lessen its effective contact with the lower pulley.

The load should not be carried on the top side of a horizontal belt. The top side should be the loose side, because this increases the arc of contact.

Belting should never run on one side of the pulley. This indicates that shafting is out of alignment, or belt not properly laced. Guides or flanges should not be used to keep belts on pulleys. The cause for their running off should be corrected.

Place the seam side of the belt away from the pulley, except on small, highly crowned pulleys.

Belts should be protected from oil of all sorts. It is very injurious to rubber as well as other kinds of belting.

TRANSMISSION BELTS—(Lacing)

The importance of proper belt lacing cannot be too strongly emphasized. A good belt may be entirely ruined through poor lacing. There are numerous metal fastenings on the market which give very satisfactory results. The best types are those which place the strain on the lengthwise strands of the belt. For small belts, wire lacings will give good service. When rawhide lacing is used the following rules should be carefully followed:

1. The ends should be cut absolutely true. Use a steel square for this work.

2. Make the holes as small as possible, using an awl rather than a punch. If a punch must be used, select one making oval holes, and turn the oval lengthwise of the belt.

3. Make two rows of holes in parallel lines straight across the width of the belt, staggering the holes so that the strain comes upon different portions of the fabric.

4. The rows of holes should be from one to two inches apart, according to the size of the belt. Be sure that the holes in the two ends to be joined match exactly. If they do not, there will be a "jog" in the belt, which is likely to result in tearing it lengthwise.

Size of Belt	Distance of Holes from Edge	Size of Lace Leather
2 to 6"	½"	3/16"
6 to 12"	⅝"	¼"
12 to 18"	¾"	⅜"

5. The lacing should be carefully done, making the pulley side as smooth as possible.Rough places and ends should be turned away from the pulley.

Transmission Belts
Table of Horse Powers, Plies, Widths and Speeds

Width	Plies	Speed in Feet Per Minute										
		1,000	1,500	2,000	2,500	3,000	3,500	4,000	4.500	5 000	5,500	6,000
4"	4	7.27	10.9	14.5	18.2	21.8	25.4	29.0	32.7	36.4	40.0	43.6 H. P.
4"	5	9.1	13.6	18.2	22.7	27.3	31.8	36.4	40.9	45.4	50.0	54.6 H. P.
4"	6	10.9	16.4	21.8	27.3	32.8	38.2	43.6	49.0	54.5	60.0	65.5 H. P.
5"	4	9.1	13.6	18.2	22.7	27.3	31.8	36.4	40.9	45.4	50.0	54.6 H. P.
5"	5	11.4	17.1	22.8	28.4	34.1	39.8	45 5	51.1	56.8	62.5	68.2 H. P.
5"	6	13.6	20.5	27.2	34.1	41.0	47.8	54.5	61.4	68.2	75.0	81.8 H. P.
6"	4	10.9	16.4	21.8	27.3	32.8	38.2	43.6	49.0	54.5	60.0	65.5 H. P.
6"	5	13.6	20.5	27.2	34.1	41.0	47.8	54.5	61.4	68.2	75.0	81.8 H. P.
6"	6	16.4	24.6	32.8	40.9	49.1	57.3	65.5	73.7	81.8	90.0	98.2 H. P.
8"	4	14.5	21.8	29.1	36.4	43.7	51.0	58.2	65.5	72.7	80.0	87.3 H. P.
8"	5	18.2	27.3	36.4	45.5	54.6	63.6	72.7	81.9	91.0	100.0	109.2 H. P.
8"	6	21.8	32.7	43.6	54.5	65.5	76.4	87.3	98.3	109.0	120.0	131.0 H. P.
10"	4	18.2	27.3	36.4	45.5	54.6	63.6	72.7	81.9	91.0	100.0	109.2 H. P.
10"	5	22.7	34.2	45.5	56.9	68.3	79.5	91.0	102.2	114.0	125.0	136.4 H. P.
10"	6	27.3	40.9	54.5	68.2	81.8	95.5	109.0	122.6	136.4	150.0	163.6 H. P.
12"	5	27.5	40.9	54.5	68.2	81.8	95.5	109.0	122.6	136.4	150.0	163.6 H. P.
12"	6	32.7	49.1	65.5	81.7	98.2	114.4	130.9	147.0	163.5	180.0	196.0 H. P.
14"	5	31.8	47.7	63.6	79.5	95.5	111.4	127.2	143.0	159.0	175.0	191.0 H. P.
14"	6	38.2	57.3	76.4	95.5	114.6	138.8	152.8	172.0	191.0	210.0	229.2 H. P.
16"	6	43.6	65.5	87.3	109.0	131.0	152.7	174.6	196.5	218.0	240.0	262.0 H. P.
16"	8	58.2	87.3	116.3	145.3	174.6	203.5	232.6	262.0	290.6	320.0	349.2 H. P.
18"	6	49.1	73.7	98.2	122.8	147.4	171.8	196.4	221.0	245.6	270.0	294.8 H. P.
18"	8	65.4	98.3	130.9	163.4	196.6	229.0	261.8	294.0	326.8	370.0	393.2 H. P.
20"	6	54.5	81.8	109.0	136.5	163.6	191.0	218.0	245.6	273.0	300.0	327.2 H. P.
20"	8	72.7	109.0	145.5	181.9	218.0	254.5	291.0	327.7	363.8	400.0	436.0 H. P.
24"	6	65.4	98.3	130.9	163.4	196.6	229.0	261.8	294.0	326.8	370.0	393.2 H. P.
24"	8	87.2	130.8	174.4	218.0	261.6	305.0	348.8	392.0	436.0	480.0	523.2 H. P.
30"	6	81.6	122.4	163.2	204.3	245.0	286.0	326.4	368.0	408.6	450.0	490.0 H. P.
30"	8	109.0	163.8	218.0	272.8	327.6	382.0	436.0	492.0	545.6	600.0	655.0 H. P.
30"	10	136.4	204.6	273.0	341.0	409.2	477.4	546.0	614.0	682.0	750.0	818.4 H. P.
36"	8	131.0	196.5	262.0	327.5	393.0	458.0	524.0	589.0	655.0	720.0	786.0 H. P.
36"	10	163.6	245.4	327.2	409.0	490.8	573.0	654.4	737.0	818.0	900.0	981.6 H. P.
42"	8	152.7	229.2	305.4	382.0	458.4	535.0	610.8	687.0	764.0	840.0	916.8 H. P.
42"	10	190.9	286.5	382.0	478.0	573.0	668.0	764.0	860.0	956.0	1050.0	1146.0 H. P.
48"	8	174.5	261.9	349.0	437.0	523.8	612.0	698.0	786.0	874.0	960.0	1047.6 H. P.
48"	10	218.0	327.0	436 0	546 0	654.0	764.0	872.0	982.0	1092.0	1200.0	1308.0 H. P.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

ELEVATOR BELTS—(Practical Engineering Data)

Capacity—The actual capacity in tons per hour equals the average weight in pounds of the material carried in each bucket, multiplied by the number of buckets passing over the head pulley per hour, divided by 2,000.

Speed—A low rate of speed is desirable for elevator belts handling such materials as stone, ore and coal, but light materials such as grain and flour may be handled at speeds as high as 600 feet per minute. With a vertical elevator the minimum speed for properly discharging the material is about 300 feet per minute, while an inclined elevator may be successfully operated at a somewhat lower rate of speed.

Horse Power—There are so many variable factors, such as height of the elevator, nature of material, method of driving, etc., that no accurate rule can be given. However, the following is a practical rule for most cases: Horse power needed will be equal to 1½ per cent of tons per hour capacity, for every ten feet of lift.

Number of Plies—In determining the number of plies it is necessary to consider the varying features of each installation. The following table will usually be found satisfactory for elevators of ordinary height (30 to 35 feet between pulley centers), handling stone, ore, gravel, lime, cement, and similar materials, with belts made of duck not lighter than 32 ounces. (Diamond Elevator Belts are 32 oz., 36 oz., and heavier.)

Belts	Plies	Belts	Plies	Belts	Plies
7″	4	10″	5	15″	6
8″	5	11″	5	18″	6
9″	5	13″	6	20″	6

ELEVATOR BELTS—(Practical Engineering Data)

Number of Plies, (Cont'd.)—The number of plies must not be too great in proportion to the size of the pulleys. If pulley is too small, or number of plies too great, the buckets will cause undue strain when passing over the pulley, and the bolts will pull out, thus ruining the belt. The following proportions have proved satisfactory in actual use:

With 5-ply belts...........24″ head pulley
With 6-ply belts...........30″ head pulley
With 8-ply belts...........36″ head pulley
With 10 or 12-ply.........48″ head pulley

Width of Belt—To determine the width, first ascertain the correct size of bucket for handling the required capacity, and belt should be two inches wider than the length of the bucket—or if buckets are staggered, the belt should be wide enough to allow a margin on either side of the outside edges of buckets.

Length of Belt—Length may be determined by the following rule: Add together the diameters in inches of the head and boot pulley, multiply by 1.57, and add to the product twice the distance between pulley centers.

Punching Bolt Holes—We punch holes for buckets in all elevator belts free of charge, when furnished with template and instructions as to the distance between buckets. Buckets should be bolted on with the round face of the nuts next to the bucket, and the use of rubber washers between the bucket and the body of the belt will considerably lengthen its life.

CONVEYOR BELTS—(General Suggestions)

Conveyor belts should be kept just tight enough to keep the belt from slipping. Automatic take-ups assist in maintaining an even tension and taking care of stretch.

Conveyor belts should be very carefully laced, with ends cut perfectly straight and at right angles to the length of the belt. A fastener with staggered prongs, gripping the lengthwise threads of the belt is the most satisfactory.

The maximum incline for most materials is 18 degrees, but some materials may be handled safely at angles as high as 23 degrees. The loading chute should feed the material to the belt in the same direction, and as nearly as possible at the same rate of speed as that maintained by the belt. The belt will wear longer if the material discharges over the tail pulley. Skirt boards should be used only at the loading point.

Conveyor belts should be run at such a speed that they are kept fully loaded, that is, the speed should be just sufficient to take care of the capacity desired. A speed of 300 feet per minute should be considered the maximum for belts 16 inches wide, 450 feet per minute for a 24-inch belt, and 600 feet per minute for a 36-inch belt. The amount of breakage allowable should also be considered in determining the speed of the belt.

Guide idlers should not be necessary when the conveyor belt itself is properly made and when the material is evenly loaded. Diamond conveyor belts are so made that they trough readily, run straight, and stay straight.

CONVEYOR BELTS—(Practical Engineering Data)

Horse power—The horse power required to run a conveyor belt must be sufficient to overcome the idler friction, and to elevate the material to the desired height. To find this horse power, add to the length of the belt ten times the height to which the material is to be elevated (in feet), multiply by the capacity in tons per hour, and divide by 10,000.

Number of plies—To find the number of plies necessary, add to the length of the belt ten times the height to which the material is to be elevated (expressed in feet), then multiply by the width of the belt in inches, then by the weight of the material in pounds per cubic foot, and divide by 250,000.

If driving pulley is lagged, instead of using 250,000 as the divisor, divide by 300,000.

However, in using this rule, do not forget that the number of plies should also be proportionate to the width of the belt. The minimum number of plies for belts of various widths is as follows: 18-inch belts, three plies; 20 to 24-inch belts, four plies; 26 to 30-inch belts, five plies; 32 to 40-inch belts, six plies, and 44 to 60-inch belts, seven plies.

CONVEYOR BELTS—(Practical Engineering Data)

Pulleys—Pulley diameters should be ample, so as not to strain the belt when it passes over them. For 3-ply belts the minimum pulley diameter should be 15 inches, 4-ply belts 20 inches, 5-ply belts 26 inches, 6-ply belts 30 inches and 7-ply belts 36 inches.

Capacity of Conveyor Belts in Tons per Hour

Per 100 feet per minute belt speed

(If speed is 200 feet per minute multiply by 2—300 feet per minute multiply by 3, etc.)

Material Handled

Width of Belt	Sand & Gravel	Crushed Stone	Width of Belt	Sand & Gravel	Crushed Stone
12″	20.73	23.04	30″	129.60	144.00
14″	28.22	31.36	32″	147.45	163.84
16″	36.86	40.96	34″	166.46	184.96
18″	46.65	51.84	36″	186.62	207.36
20″	57.60	64.00	42″	254.01	282.24
22″	69.69	77.44	48″	331.77	368.64
24″	82.94	92.16	54″	419.90	466.56
26″	97.34	108.16	60″	518.40	576.00
28″	112.89	125.44		Write for Prices	

RUBBER TRANSMISSION BELTING

Friction Surface

A special friction surface rubber belt of the highest grade for transmission purposes.

Victor is a special belt in every sense of the word, designed for unusual work. Made on a weave of extra heavy duck, has great strength, yet it is pliable and practically stretchless.

The plies will not separate even under the most severe conditions. The tough, tenacious friction of high grade rubber prevents this.

Recommended for most exacting conditions, and is the highest grade belt for Main Drives, Paper Mills, Cement Mills, Oil Well Drilling, Saw Mills, Metal and Coal Mining, Steel Works, Hot or Cold Saw Work, etc. In fact any industry where conditions are unusually severe will find Victor the ideal belting.

Rubber Belting List Price Per Foot

Inch	2-Ply	3-Ply	4-Ply	5-Ply	6-Ply	7-Ply	8-Ply	9-Ply	10-Ply	11-Ply	12-Ply
1	$0.18	$0.20	$0.24								
1¼	.23	.26	.30								
1½	.27	.31	.36	$0.45							
1¾	.32	.36	.42	.53							
2	.34	.39	.46	.58	$0 .69						
2½	.42	.48	.56	.70	.84						
3	.48	.55	.65	.81	.98						
3½	.57	.65	.76	.95	1.14						
4	.61	.70	.82	1.03	1.23	$ 1.44					
4½		.78	.92	1.15	1.38	1.61					
5		.87	1.02	1.28	1.53	1.79					
6		1.04	1.22	1.53	1.83	2.14	$ 2.44	$ 2.75	$ 3.06	$ 3.36	$ 3.66
7		1.22	1.43	1.79	2.15	2.50	2.86	3.22	3.58	3.94	4.30
8		1.31	1.54	1.93	2.31	2.70	3.08	3.47	3.86	4.24	4.62
9			1.73	2.16	2.60	3.03	3.46	3.89	4.32	4.76	5.20
10			1.92	2.40	2.88	3.36	3.84	4.32	4.80	5.28	5.76
11			2.11	2.64	3.17	3.69	4.22	4.75	5.28	5.81	6.34
12			2.30	2.88	3.45	4.03	4.60	5.18	5.76	6.33	6.90
13			2.50	3.13	3.75	4.38	5.00	5.63	6.26	6.88	7.50
14			2.69	3.36	4.04	4.71	5.38	6.05	6.72	7.40	8.08
15			2.88	3.60	4.32	5.04	5.76	6.48	7.20	7.92	8.64
16			3.08	3.86	4.62	5.40	6.16	6.94	7.72	8.48	9.24
18			3.46	4.32	5.20	6.06	6.92	7.78	8.64	9.52	10.40
20			3.84	4.80	5.76	6.72	7.68	8.64	9.60	10.56	11.52
22			4.22	5.28	6.34	7.38	8.44	9.50	10.56	11.62	12.68
24			4.60	5.76	6.90	8.06	9.20	10.36	11.52	12.66	13.80
26				6.26	7.50	8.76	10.00	11.26	12.52	13.76	15.00
28				6.72	8.08	9.42	10.76	12.10	13.44	14.80	16.16
30				7.20	8.64	10.08	11.52	12.96	14.40	15.84	17.28
32				7.72	9.24	10.80	12.32	13.88	15.44	16.96	18.48
34				8.18	9.82	11.46	13.08	14.72	16.36	18.00	19.64
36				8.64	10.40	12.12	13.84	15.56	17.28	19.04	20.80
38					10.96	12.78	14.60	16.42	18.24	20.08	21.92
40					11.52	13.44	15.36	17.28	19.20	21.12	23.04
42					12.10	14.10	16.12	18.14	20.16	22.18	24.20
44					12.68	14.76	16.88	19.00	21.12	23.24	25.36
46					13.24	15.44	17.64	19.86	22.08	24.28	26.48
48					13.80	16.12	18.40	20.72	23.04	25.32	27.60
50					14.40	16.82	19.20	21.62	24.04	26.42	28.80
52					15.00	17.52	20.00	22.52	25.04	27.52	30.00
54					15.58	18.18	20.76	23.36	25.96	28.56	31.16
56					16.16	18.84	21.52	24.20	26.88	29.60	32.32
58					16.72	19.50	22.28	25.06	27.84	30.64	33.44
60					17.28	20.16	23.04	25.92	28.80	31.68	34.56

ANTI-HYDRO WATERPROOF LEATHER BELTING

Waterproof

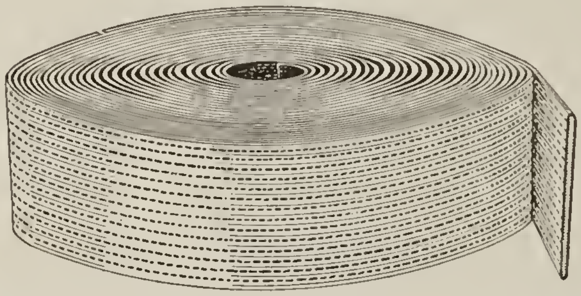
This belt is guaranteed not to come apart no matter how badly it may be wet. It is made from best shortlap stock, thoroughly waterproofed, and is designed for moist or damp places or where a belt is likely at times to be actually submerged, as in wheel pits.

It possesses all the durability and high pulling power of the best leather belts. Made in single and double.

SOLID ROUND BELTING

Size Inches	Style	Price per Foot	Size Inches	Style	Price per Foot
⅛	Heavy	$.07	5/16	Regular	$.21
3/16	Heavy	.10	5/16	Heavy	.24
¼	Regular	.14	⅜	Regular	.29
¼	Heavy	.15½	⅜	Heavy	.33
9/32	Regular	.17	½	Regular	.51

STITCHED CANVAS BELTING



Made from cotton duck, folded and sewn. Waterproofed by a composition of oils being forced through all the fibres and the surfaces coated with red paint.

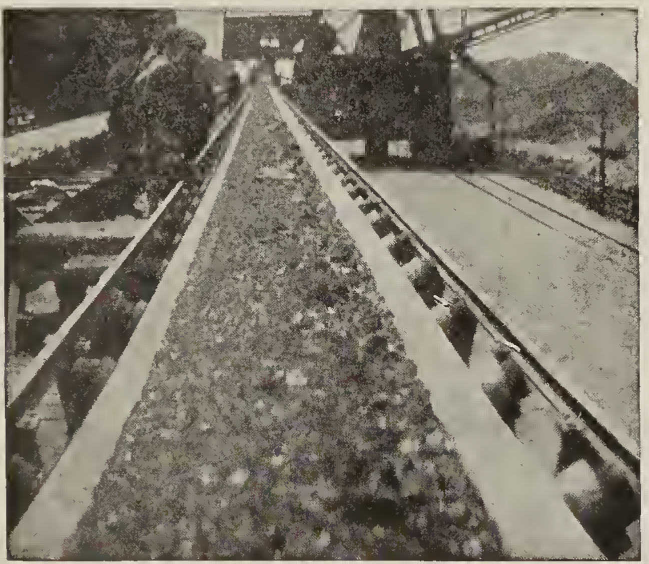
Especially adapted to outdoor work.

Charge for making belts endless, quoted upon application.

Width Inches	Price per Foot 4 Ply	5 Ply	6 Ply	8 Ply	10 Ply
1	$ .20	.....	.....	......	......
1½	.30	.....	.....	......	......
2	.39	$ .49	$ .59	......	......
2½	.48	.60	.72	......	......
3	.57	.71	.86	......	......
3½	.65	.81	.98	......	......
4	.74	.93	1.11	$1.48	......
4½	.81	1.01	1.22	1.62	......
5	.90	1.13	1.35	1.80	......
6	1.05	1.31	1.58	2.10	......
7	1.20	1.50	1.80	2.40	......
8	1.35	1.69	2.03	2.70	......
9	1.49	1.86	2.24	2.98	......
10	1.62	2.03	2.43	3.24	......
11	1.76	2.20	2.64	3.52	......
12	2.05	2.57	3.08	4.10	$ 5.13
13	2.15	2.69	3.23	4.30	5.37
14	2.31	2.90	3.47	4.62	5.78
15	2.48	3.09	3.72	4.96	6.20
16	2.64	3.30	3.96	5.28	6.60
18	2.97	3.72	4.46	5.94	7.43
20	3.30	4.13	4.95	6.60	8.25
22	3.63	4.55	5.45	7.26	9.08
24	3.96	4.95	5.94	7.92	9.90
26	4.68	5.85	7.02	9.36	11.70
28	5.04	6.30	7.56	10.08	12.60
30	5.40	6.75	8.10	10.80	13.50
32	5.76	7.20	8.64	11.52	14.40

RUBBER BELTING

Conveyer



The most improved and efficient method of transmitting articles or materials from one location to another throughout a plant or building is by the use of rubber conveyor belting.

When the conveyor belt is in operation, it is possible to deliver a constant flow of material to the desired destination, whether coal, gravel, lime and similar heavy material, or light packages such as pasteboard containers, etc.

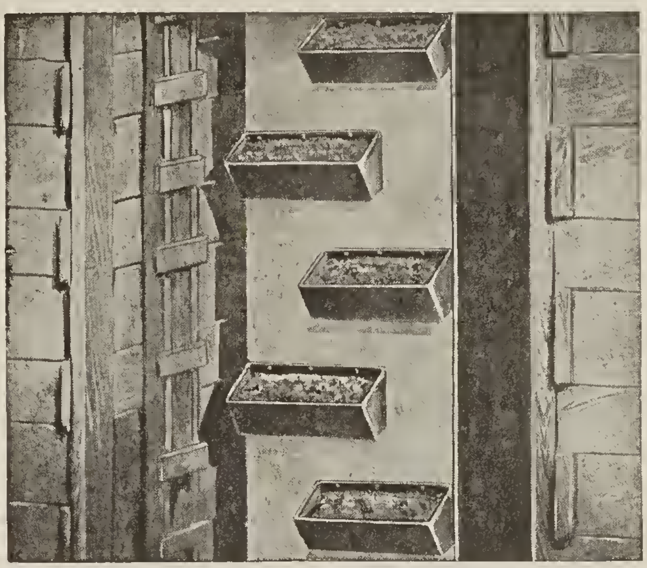
Every conveyor belt should contain plies of duck of great tensile strength as well as flexibility. The belt must be strong enough to carry the load, yet pliable enough to pass freely over the pulleys and must trough thoroughly. The rubber friction between the plies must prevent separation as well as protect the fabric from the destructive effects of moisture. Our belts will trough of their own weight. They are not stiff and will not ride the side incline idlers.

On the carrying side of the belt we furnish a cover with a thickness varying from 1/16″ to ¼″ as conditions warrant. This cover is of specially compounded rubber to withstand the wear of the materials to be conveyed. The under side requires a tough resistant cover to protect the duck from any cutting effects when the belting is conveying hard, sharp materials.

Prices sent on request.

RUBBER BELTING

Elevator



For Quarry, Mine, Grain and Other Lines

This is a class of service that subjects belting to conditions which mean rapid deterioration unless the belts are specially made to resist the effects of dampness or moisture admitted through the holes punched for the attachment of buckets. To overcome this, we thoroughly impregnate the plies of duck with a special grade of frictioning compound.

The duck is specially woven to prevent warping or sagging and to secure the great tensile strength required, also to resist the pulling out of the bolts that hold the buckets.

VICTOR BRAND embodies the results of years of careful study and can properly be classed as the highest development of belting for ore elevator purposes; especially for cases where the belting is subjected to the destructive effects of hard, sharp particles.

CROWN BRAND is a moderately priced belt, and where conditions are not too severe, will give good service.

In these two brands we can meet every requirement for belting in the elevator field.

When specified, elevator belting can be made with reinforced cover from 1/16″ to ¼″ thick.

Prices on request.

RUBBER MITTENS

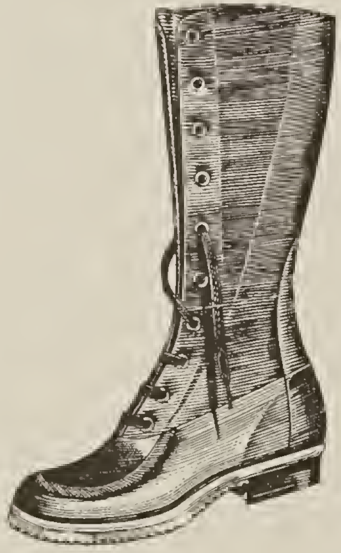
Our black rubber mittens are made of the very best grade of rubber, with heavy net lining. Can be furnished in any size.

List. Per doz. $35.00

RUBBER BOOTS

Made of black tough rubber with red rubber soles. Sizes 5 to 12.

Knee Boots. Per pair	$ 6.00
Hip boots. Per pair......................	10.00
Storm King Boots. Per pair	8.00



Miners or contractors high boots. 15 in. long with 12 eyelets. Extra heavy white soles and heels. Sizes 6 to 12.

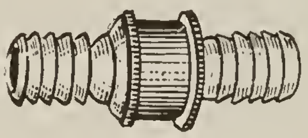
Per pair $8.00

LACED SHOES

White rubber. Sizes from 5 to 12.

Per pair $6.00

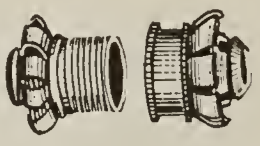
GARDEN HOSE COUPLINGS



Stamped brass shanks; cast brass swivel.

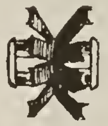
No.	8	10	12
Hose, ins.	½	⅝	¾
Per doz.	$2.60	2.60	2.60

Perfect clinching; brass body; galvanized steel clamps.



No.	8P	10P	12P
Hose, ins.	½	⅝	¾
Per doz.	$4.00	4.00	4.00

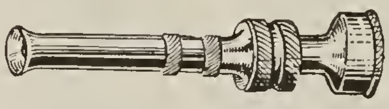
HOSE MENDERS



Perfect clinching; brass tube; galvanized steel clamps.

No.	8PM	10PM	12PM
Hose ins.	½	⅝	¾
Per doz.	$1.70	1.70	1.70

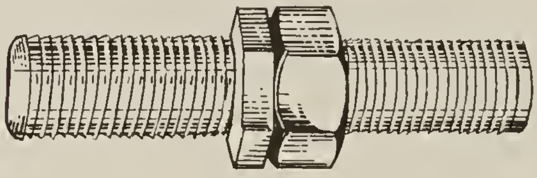
SPRAY NOZZLES



The spray can be graduated from a fine mist to a coarse spray or a straight stream. For ¾″ hose coupling.

No. 20—Each $0.60

STEAM HOSE COUPLINGS

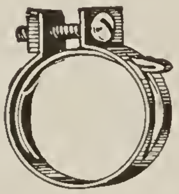


Size, ins.	½	¾	1	1¼	1½	2
Price, each	$1.90	2.40	2.40	2.80	3.30	5.50

Above prices includes clamps

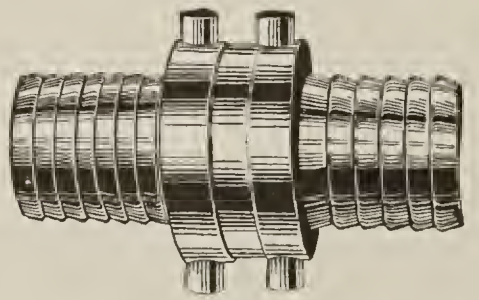
GALVANIZED STEEL HOSE CLAMPS

For Steam Hose Coupling



Hose size	Ply	Per doz.
½″	3, 4, 5, 6	$1.00
¾″	3, 4, 5, 6	2.00
1″	3, 4, 5, 6	2.50
1¼″	2, 4, 5, 6	3.00
1½″	3 to 5	3.50
2'	3, 4, 5, 6	5.50

FIRE HOSE COUPLING



Made from heavy brass stock with two heavy brass expansion rings. Made for single and double jacket hose.

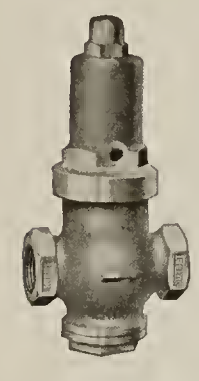
Single Jacket

Size	1½″	2″	2½″
Price	$3.00	4.00	5.00

Double Jacket

Size	1½″	2″	2½″
Price	$3.60	5.60	6.70

PRESSURE REGULATING VALVES FOR YOUR PAVING JOB.



The water valve manufacturers advise us that to obtain the best results from water valves the water pressure should not exceed over 45 pound pressure per square inch. They state that if you have a higher pressure than this you put an undue wear on your valves.

In view of the fact that you are turning out a batch of concrete every 70 to 80 seconds this means that you are opening and closing the water valves on your paver 40 to 50 times per hour, or 400 to 500 times a day. This means that in a month's time the valves are opened and closed something like 10,000 to 12,000 times.

By not having too great a water pressure on these valves, they will last through several seasons. On the other hand, by carrying a too great water pressure, you will have valve trouble sooner or later.

We have made a test of these valves using a 45 pound pressure. We find that the 42 gallon Rex Water Tank will fill in 32 seconds time, under a 45 pound pressure. In view of the fact that you have one minute to fill the tank this means that the tank fills in a little over half the time required.

1½" Size Pressure Regulating Valve. Standard Pipe Thread	$40.00
2 " Size Pressure Regulating Valve. Standard Pipe Thread	45.00

IRON BODY GATE VALVE

This iron body, bronze mounted, double disc gate valve is made for air, oil, natural gas, steam and water. This valve will not freeze and crack so easily as a brass valve. We recommend this iron valve to be used in your water line on paving jobs.

Working Steam Pressure
1¼" to 16", 125 lbs.

Working Water, Oil and Natural Gas
pressure 1¼" to 16", 150 lbs.

Test Pressure
1¼" to 16", 300 lbs.

Size, ins.	1¼	1½	2	2½	3	3½	4	5	6	8
No. 260, Price	$7.25	8.50	10.00	11.50	14.00	17.00	19.00	27.50	32.50	54.00

WATER HOSE

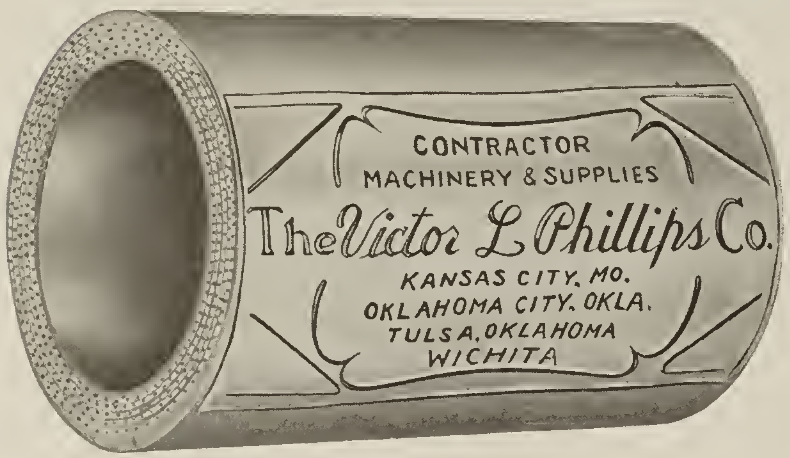
Working Pressure, Approximate Weights and Outside Diameters.

Braided Construction	Outside Dia.	Wt. per 50 ft.	Working Pressure
¾" 3 Braid	1¼"	22½ lbs.	150 lbs.
1 " 2 Braid	1⅜"	21 lbs.	100 lbs.
1 " 3 Braid	1 17/32"	27½ lbs.	125 lbs.
1¼" 2 Braid	1⅝"	35½ lbs.	100 lbs.
1¼" 3 Braid	1¾"	44½ lbs.	125 lbs.
1½" 2 Braid	1⅞"	43½ lbs.	100 lbs.
1½" 3 Braid	2 "	54 lbs.	125 lbs.

Wrapped Fabric Construction	Outside Diameter	Wt. per 50 ft.	Working Pressure
½"	¾"	13.9 lbs.	125 lbs.
¾"	1⅛"	18.5 lbs.	100 lbs.
¾" 4-ply	1 3/16"	21.5 lbs.	125 lbs.
1 " 3-ply	1 7/16"	23 lbs.	75 lbs.
1 " 4-ply	1½"	26 lbs.	100 lbs.
1¼" 4-ply	1¾"	33 lbs.	100 lbs.
1¼" 5-ply	1⅞"	37.8 lbs.	125 lbs.
1½" 4-ply	2 "	38 lbs.	100 lbs.
1½" 5-ply	2¼"	43.7 lbs.	125 lbs.
2 " 5-ply	2¾"	60 lbs.	125 lbs.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

OUR SPECIAL CONTRACTORS' 5-PLY 2-INCH PAVER HOSE.



Our two-inch paver hose is the result of years of careful study and selection and we have made up a hose to our own specifications and which is sold under our name and backing. This hose is a 5-ply hose constructed to give service to the paver. Although no hose can be built to withstand excessive pressure our hose will take care of your peak load when used with our pressure regulating valve.

Victor paver hose has an extra tough tube which will give service when other hose will cut with the abrasive action of the sand and grit which is picked up by the pump. The hose is of the 5-ply construction which gives it excessive strength. The cover is made of tough red rubber which will stand continual dragging over rough ground and which protects the cloth plies and gives longer life to the hose.

We carry a complete stock of Victor 2-inch 5-ply Paver hose for immediate shipment to your jobs. Remember that we have spent years developing this hose and for the one idea of creating a hose to give service to the paver. We not only recommend this hose as the best for the contractor but we stand behind it. Under all conditions it will stand up and give service when not subjected to excessive abuse such as running the steel wheels of heavy machinery over it. An entire paving outfit can be shut down by a defective piece of hose and the losses will mount into the hundreds of dollars every hour. Use Victor brand and reduce these costly shutdowns to a minimum.

What Victor Brand Means

Victor brand hose is the result of years of study and is built with the problems of the contractor in mind. Victor hose will give service where other hose cannot expect to stand up.

Victor hose is our own private brand and we stand behind it to give satisfactory service.

When you need hose of any kind please give us an order and you will never buy any other kind. We carry a complete line of water hose, steam hose, air hose, suction hose and dredge sleeves.

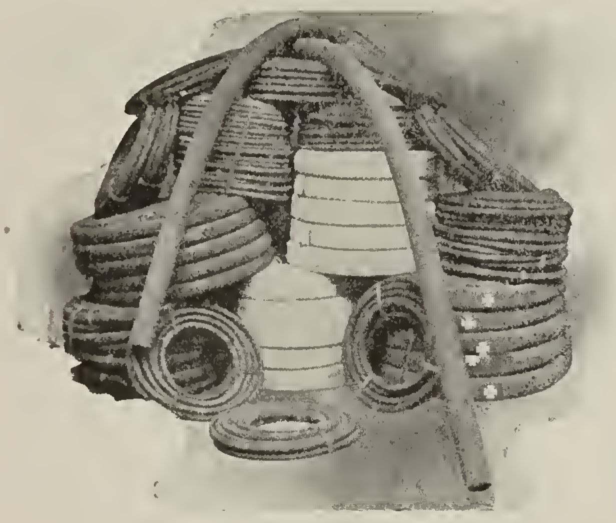
WATER HOSE PRICE LIST

(Garden Hose does not apply under the Water Hose list)

Internal Diameter		Conducting Hose 2-Ply	Hydrant Hose 3-Ply	Engine Hose 4-Ply	Engine Hose 5-Ply	Engine Hose 6-Ply
½ inch		$0.20	$0.25	$0.30	$0.37	$0.45
¾ "		.25	.30	.37	.46	.55
1 "		.33	.40	.50	.62	.75
1¼ "		.42	.50	.62	.77	.93
1½ "		.50	.60	.75	.93	1.12
1¾ "		.58	.70	.87	1.08	1.30
2 "		.66	.80	1.00	1.25	1.50
2¼ "		.75	.90	1.12	1.40	1.68
2½ "		.83	1.00	1.25	1.56	1.87
2¾ "		.92	1.10	1.37	1.71	2.05
3 "		.99	1.20	1.50	1.87	2.25
3½ "	TANK HOSE FOR RAILROADS	1.15	1.40	1.75	2.18	2.62
4 "		1.32	1.60	2.00	2.50	3.00
5 "		1.65	2.00	2.50	3.12	3.75
6 "		1.98	2.40	3.00	3.75	4.50
7 "		2.31	2.80	3.50	4.38	5.25
8 "		2.64	3.20	4.00	5.00	6.00
9 "		2.97	3.60	4.50	5.62	6.75
10 "		3.33	4.00	5.00	6.25	7.50

All intermediate sizes charged at the list price of the next larger size. Hose with more plies than given above furnished at increase in

VICTOR BRAND WATER HOSE

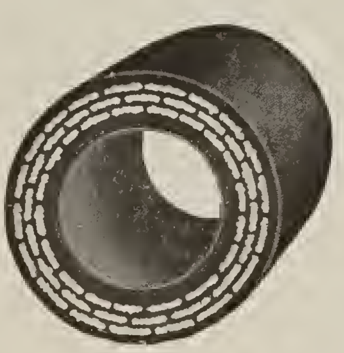


Our stock of water hose is complete both wraped and molded construction.

Wraped hose is furnished in 50′ lengths only in 4 plys and more, and is used for all general conducting purposes.

Molded water hose is particularly recommended for large contractors of all kinds, steel mills, paper mills, coal and oil mines and similar places where water is conducted under pressure.

Braided and molded water hose is made of two or more plys of endless braided fabric with a coating between each ply of strong rubber. Cover is especially compounded to withstand abrasion. The tube is fixed strong and exceptionally smooth, free from grub holes and pin holes our Victor Brand Molded Hose is light in weight and extremely pliable. It is practically kinkless. Furnished in continuous lengths in sizes 1″, 1¼″ and 1½″, plain red cover, 1″ furnished in any length or on reels of approximately 500′ each. 1¼″ and 1½″ on reels up to 250′. Molded water hose is sold from list shown below.



Internal Diameter	3-Braid
Victor Brand—1 in.	$0.50 ft.
Victor Brand—1½ in.	.75 ft.

See Water Hose List Price.

GARDEN HOSE

THE DIAMOND RUBBER Co
STAR
AKRON, OHIO.

Lightness in weight and freedom from kinking are distinctive advantages of this type of hose. It may be given short bends twisted and roughly handled without injurious effect. Victor garden hose is indeed a leader in its class. Sold net price per foot, coupled 50′ lengths or in continuous lengths 500′ to the bale.

50′ lengths with ¾″ couplings	$0.20 ft.

RADIATOR HOSE

A well constructed radiator hose, for use on tractors, trucks, gasoline engines and pleasure cars. Sold in 3-foot lengths, 3 ply.

Size inches	1	1¼	1½	1¾	2
Price per foot	$ .40	.45	.50	.55	.60
Size inches	2¼	2½	2¾	3	...
Price per foot	$ .70	.75	.80	.85	...

GASOLINE HOSE

Diamond Brand; Metal Lined

The result of years experimenting and testing in one of the best equipped factories and laboratories in the country.

Tested and approved and the quality and construction is examined and tested at frequent intervals. No better guarantee of quality could be given.

The rubber compounds employed in the tube are of the hightest grade and will resist the action of gasoline to a great extent.

Size inches	1¼	1½	2
Price per foot	1.17	1.52	2.31

OXYGEN AND ACETYLENE HOSE

Acetylene hose is red covered, oxygen hose has a black covering. Both types are identical in quality and construction.

This hose is built up of multiple plies and woven jacket, a tube that will not harden or deteriorate from action of the gases and a tough, wear resisting cover.

Maximum lengths 50 feet.

Titan Brand

Size	Ply	Price, per foot
¼ in.	6	$0.60
5/16 in.	6	.65
⅜ in.	7	.70
½ in.	7	.80

PAINT SPRAY HOSE

Titan Brand

Braided construction, in lengths up to 500 feet. Generally sold in 25 foot and 50 foot lengths made especially for use with paint spraying machines. Made to resist the action of turpentine and oils.

Inside Diameter	No. of Braids	Price per Foot
¼ in.	2	$0.51
5/16 in.	1	.42
⅜ in.	1	.51
⅜ in.	2	.57
½ in.	2	.69

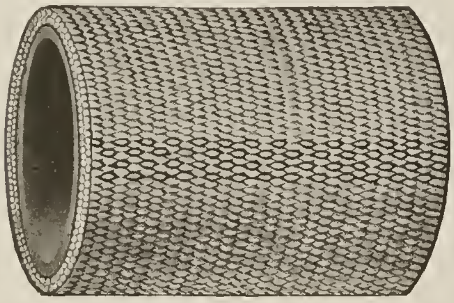
Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

STEAM HOSE

DIAMOND
STEAM

Steam hose is no better than the tube that goes into it. High pressures and correspondingly high temperatures rapidly kill the nerve in the tube of ordinary steam hose. Failure is the result. Additional plys of duck contribute nothing to longer life unless balanced with tube of heat resisting construction. Once the tube is charred or cracked the hose is destroyed. Victor steam hose is famous for the heat resisting qualities of its tube. The cover of Victor Hose is tough and strong. Scrupulous care is exercised in the making of this hose. We warrent Victor Steam Hose to be equal or superior to any steam hose on the market. Look for the brand Victor. Steam Hose can be furnished in sizes ½″ to 3″ and four to eight ply. Steam hose can be furnished in 25′ and 50′ lengths only. When desirable steam, water and air drill hose can be furnished with red painted solid woven cotton jacket. Special heat resisting cover is also furnished when outside of the hose is subject to hot coals, hot ashes, etc. This heat resisting cover keeps the cover from being burned and adds greatly to the life of the hose.

Steam hose can also be equipped with wire winding at slight additional cost.



Red Painted Jacket

Internal Dia. Inches	Price, per ft. 4-ply	5-ply	6-ply	7-ply	8-ply
½	$ .56	$ .70	$ .84	$ .98	$1.12
¾	.71	.87	1.05	1.23	1.41
1	.87	1.07	1.28	1.50	1.70
1¼	1.04	1.30	1.56	1.82	2.08
1½	1.25	1.56	1.87	2.18	2.50
1¾	1.45	1.81	2.17	2.53	2.90
2	1.66	2.07	2.49	2.90	3.32
2¼	1.87	2.33	2.80	3.27	3.74
2½	2.08	2.60	3.12	3.64	4.16

When ordering, state steam pressure used.

JETTING HOSE

If you are doing any river work you will need jetting hose. We carry the finest grade obtainable. Made of a special closely woven duck built over a thick tough tube, ends specially reinforced to stand the action of flexing. We unhesitatingly offer this hose for your approval, knowing that is will give absolute satisfaction under the most trying circumstances, carried in 2½″, 3″ and 4″ sizes. Furnished in 50′ lengths only, with or without couplings.

Prices on application.

SAND BLAST AND GUNITE HOSE

Sand Blast and Gunite Hose

For foundries, iron working plants, where sand blast is used for cleaning castings, removing rust from metal, etc. Also employed for removing old stains, cleaning stone, frosting glass and other work of a similar nature. Used extensively in construction work in connection with gunite and cement spray machines. This hose is made of two or more plys of duck. Special tube of pure gum rubber which resists the cutting effect of sand driven through the hose at high pressure.

VICTOR FIRE HOSE

Single, Double and Solid Woven Multiple Jacket

Single and double Jacket Fire Hose, made according to specifications of the National Board of Fire Underwriters, Chicago, Ill.

Victor Hose can be furnished to Underwriters' specifications, but made with solid multiple woven jacket described on page 71 in place of two separate jackets, at a slightly higher price than the double jacket.

Solid Woven Multiple Jacket Hose made to Underwriters' specifications is lighter in weight than the regular fire department hose, but meets every requirement of the Underwriters.

Victor Hose is extremely flexible and easily coiled Built to withstand a test pressure of 400 pounds per square inch in Double Jacket and 300 pounds per square inch in Single Jacket Hose.

Every section is tested by the Underwriters' Inspector before shipment. Each 50' section of Double Jacket Hose weighs approximately 55 pounds, uncoupled. Single Jacket, 40 pounds, uncoupled.

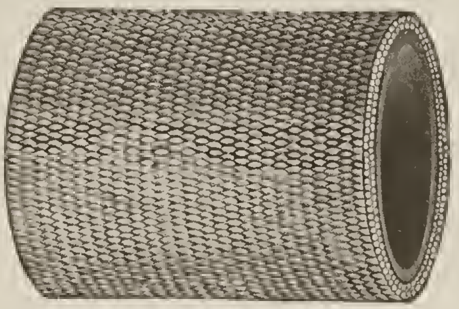
Victor hose bears the Underwriters' label on every 50-foot section.

When ordering, if not familiar with the thread of coupling, sample should be submitted.
Made in 1½", 2", 2½" and 3" size.

COTTON RUBBER LINED MILL HOSE

For Mill and Factory Fire Protection

Victor Brand is single jacket woven weight made in the most careful manner. Extra quality woven from patent rubber lined fire hose lead. Furnished in 50' lengths only, prices on application.



Rubber Lined

Internal Dia.	Per ft.
1 "	$0.40
1¼"	.45
1½"	.50
2 "	.65
2½"	.80

RUBBER COVERED FIRE HOSE

Our Victor Brand made of long fibre closely woven duck over a heavy tough rubber cover. Extra heavy wear resisting cover. This hose is ideal for street cleaning, sewer work, general excavation purposes. Furnished in 50' lengths only. Prices on application.

We are in position to furnish fire hose, cotton rubber lined mill hose for municipalities and industrials. All grades and constructions furnished in sizes 2½" to 3". We solicit your inquiries. In ordering fire hose, unless connections are standard, it is advisable to furnish couplings as a sample to insure prompt or best connections.

SUCTION HOSE

Our Victor Brand Suction Hose is especially adapted for Excavating, Wrecking, Mining, Sand Pumps, Steam Fire Engines, Dredging, etc.

Victor Suction Hose is recognized as exceptional. Heavy steel wire prevents collapsing and kinking. Victor hose is furnished complete with nipples wired in with a heavy copper wire under tension. This method of inserting nipples has proven the greatest possible boon to users on account of the fact that it prevents pulling out either when making the connection to the pump lowering in place or vibration while under surface. This not only saves possible loss by injury but saves time plugging up a leaky connection.

This hose is carried in Kansas City stock as well as at our branches in 15 and 20 foot lengths. This hose is especially suitable for the contracting trade where hose is required for heavy duty and steady performance.

SMOOTH BORE

Our smooth bore hose is built on spring steel wire, is light and flexible, and the wire is brought well up over the nipple which prevents the hose from collapsing at the nipple.

SMOOTH BORE

Int. Diam.	Per Ft.	Int. Diam.	Per Ft.
1 in.	$1.05	6 in.	$10.50
1¼ in.	1.30	6½ in	12.00
1½ in.	1.70	7 in.	13.50
1¾ in.	2.15	7½ in.	15.00
2 in.	2.60	8 in.	16.50
2¼ in.	3.05	9 in.	19.50
2½ in.	3.50	10 in.	22.50
3 in.	4.50	12 in.	27.50
3½ in.	5.50	14 in.	32.50
4 in.	6.50	15 in.	35.00
4½ in.	7.50	16 in.	37.50
5 in.	8.50	17 in.	40.00
5½ in.	9.50	18 in.	42.50

ROUGH BORE

Our rough bore hose is wire lined and is designed as a general purpose hose for conducting water under all general conditions.

ROUGH BORE SUCTION HOSE

Int. Diam.	Per Ft.	Int. Diam.	Per Ft.
¾ in.	$0.70	4½ in.	$ 6.70
1 in.	.90	5 in.	7.60
1¼ in.	1.15	5½ in.	8.50
1½ in.	1.50	6 in.	9.50
1¾ in.	1.90	7 in.	12.00
2 in.	2.30	7½ in.	13.50
2¼ in.	2.70	8 in.	15.00
2½ in.	3.10	9 in.	17.50
3 in.	4.00	10 in.	20.00
3½ in.	4.90	12 in.	25.00
4 in.	5.80		

HOSE NIPPLES AND BANDS

Size	Each
2″x10″ Nipple with 2 bands	$1.80
3″x12″ Nipple with 2 bands	2.10
4″x14″ Nipple with 2 bands	4.50

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

SAND SUCTION HOSE AND DREDGE SLEEVES

SAND SUCTION HOSE
And
DREDGE SLEEVES

Victor Brand

Victor Brand sand suction hose is built of the very finest material obtainable, the tube is of pure gum compound built to stand the abrasive action of sand and gravel. The duck is closely woven of a long staple fibre securely frictioned and extra heavy. We firmly believe that this is the very finest sand suction hose built. It has been tried and tested in a great number of sand plants in Kansas City and vicinity. We offer it to our trade with the positive assurance that there is no better sand suction hose on the market.

VICTOR SAND SUCTION HOSE

Built Oversized to Take Nipples

Kansas City Stock Enlarged Ends

6″	6-ply	¼″ tube 5′ long, each	$ 92.00
8″	8-ply	¼″ tube 6′ long, each	164.80
10″	10-ply	¼″ tube 8′ long, each	279.50

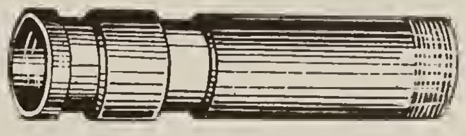
VICTOR DREDGE SLEEVES

For a number of years the purchase of dredging sleeves was more or less a hit or miss proposition. After considerable research and numerous tests, we offer our Victor Brand as the utmost in dredging sleeve quality. Victor Dredging Sleeves are carried in stock in Kansas City as well as our branches. Made over size in the following sizes with ¼″ tube:

VICTOR DREDGING SLEEVES

All Oversized

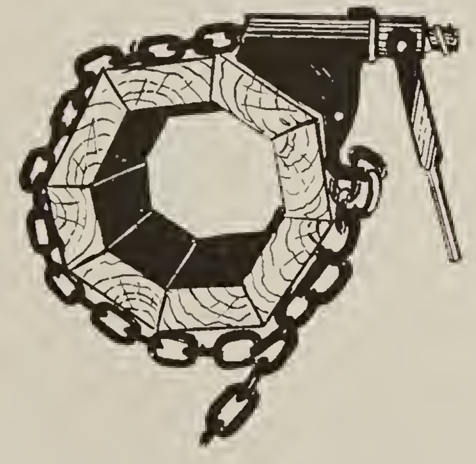
6⅝″	8-ply	¼″ tube 3′ long,	$ 52.20
8⅝″	8-ply	¼″ tube 4′ long	74.70
10¾″	8-ply	¼″ tube 6′ long	133.60



IRON PIPE NIPPLES, WITH BANDS

2- 6″x16″	2 bands	$13.32
2- 8″x18″	3 bands	20.66
2-10″x20″	3 bands	30.00

A POWERFUL CONVENIENT CLAMP FOR ATTACHING RUBBER SLEEVES TO PIPE



This cut shows the clamp applied to a wood porch column and is used to illustrate the construction.

It consists of a cast head roughly triangular in shape, a 1″ screw, a long swiveled handle, and a ⅜″ chain riveted to one end of the screw, and hooked to the block on the other end.

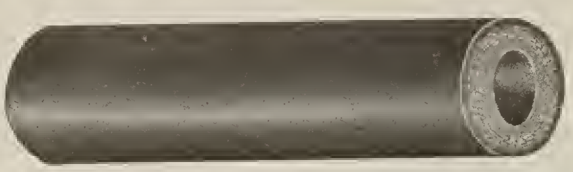
Note particularly that the screw is placed at a tangent to the circle, which is the best position for even pressure distribution.

The clamp is supplied either with the flat bottomed block as shown or with a compound curve that will fit any radius within the capacity of the clamp.

No. 2 Column Clamp with 6′ of chain. Per doz.	$72.00
No. 2 Column Clamp with 5′ of chain. Per doz.	68.00
Extra Chain for above. Per foot.	.25

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

AIR DRILL HOSE



Victor is of the braided moulded type of construction. The cover is unusually heavy to withstand the abrasive wear in pulling hose over the rough surfaces of mine, quarry or other places where this type of hose is used.

Made with two and three endless braids of fabric having an extra-heavy tube of an oil-resisting compound.

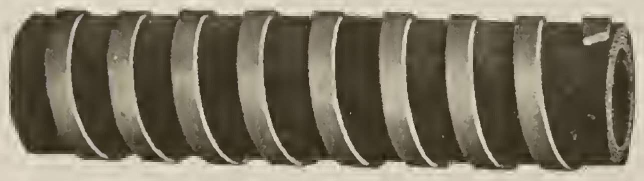
Victor is extra strong, pliable, light in weight and practically kinkless.

Made in ¾, 1, 1¼ and 1½ inch sizes.

Braided moulded construction Air Drill Hose is furnished in continuous length of reels from 250 to 500 feet.

Round Wire

Half Round Wire



Flat Wire

VICTOR BRAND AIR HOSE

Three Braid Construction

List Prices

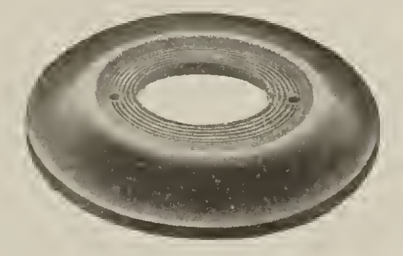
½″ 3 braid. No couplings. Per ft.	$0.50
¾″ 3 braid. No couplings. Per ft.	.72
1″ 3 braid. No couplings. Per ft.	1.62

For couplings for above hose see page 170

Above prices do not include wire winding.

Victor air hose can be wire wound at slight additional cost. Wire winding recommended if pressure is excessive and conditions unusually severe.

RUBBER DIAPHRAGMS



Rubber Diaphragms, F. O. B. Kansas City

Wonder, 3-inch, each	$3.70
Wonder, 4-inch, each	4.80
Barnes, 3-inch, each	3.80
Barnes, 4-inch, each	4.90
Gould, 3-inch, each	3.90
Gould, 4-inch, each	5.00

The diaphragms listed above are made in proper sizes and of stock that has proved most satisfactory for use in hand-operated pumps for the pumping of water from cellars, sewers, excavations, etc.

RED WIZARD PUMP DIAPHRAGMS

Built Especially for Use in Power Pumps

Built of a tough red stock with 2-ply duck insertions. The first cost is slightly higher, however, this diaphragm will prove the cheapest in the long run. It prevents loss of time and cuts down while on the job, and is guaranteed to give extra hours of service.

Prices: No. 3 Gould, Each	$3.00
No. 4 Gould. Each	3.50

RED SHEET PACKING

A sheet made from a special red rubber compound, that is positively not affected by expansion or contraction. Recommended for use against steam, hot or cold water, etc. Style No. 1902.

List price per lb. **$1.00**

WIRE INSERTION FOR SHEET PACKING

In rubber packings to be used for very high pressures and difficult joints, a wire insertion is naturally stronger and more preferable to fabric.

No. 1902½—$\frac{1}{16}$″ and over List price, lb. **$1.50**

Above sheets made 36 inches wide in $\frac{1}{32}$″, $\frac{1}{16}$″, $\frac{3}{32}$″, ⅛″ and ¼″ thicknesses

NO. 1915 BLACK RUBBER PACKING

EBONITE

Innumerable tests of various lengths and severity have proved this packing to be the most serviceable for high pressure, super-heated steam, hot or cold water, air and all other kinds of joints requiring packing.

Engineers have been quick to recognize the superior qualities of Ebonite, and it is now used almost exclusively in many of the largest Power Houses, Factories and Machine Shops.

Ebonite even after the severest usage, seldom hardens. Remember this; for hasn't hardening shortened the life of every packing you ever used?

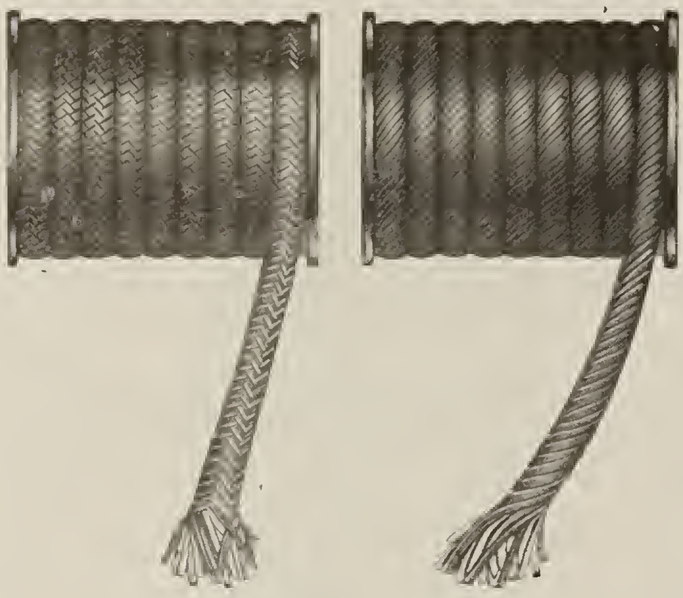
ASBESTOS SHEET PACKING

Tenax packing is made in sheets 25″x25″, 20″x 50″ and 50″x50″, $\frac{1}{32}$″, $\frac{1}{16}$″ and ⅛″ thick.

List price, lb. **$2.00**

Tenax compressed; for use on Superheated Steam and where packing comes in contact with extremely high temperatures; gaskets made from Pyroid will not burn or blow out.

REX VALVE STEM PACKING



For small valve units on steam, water, acids, oils, ammonia, etc.

Illustrated at the left above is Victor No. 142, a braided valve stem packing. At the right is Victor No. 143, a twisted valve stem packing. Both made from long fibre, ninety per cent pure asbestos yarn, thoroughly impregnated with oil and graphite.

Victor No. 142 Rex Valve Stem, Braided, lb. . .	$2.25
Victor No. 143 Rex Valve Stem, Twisted, lb. . .	2.00

Above packings wound on spools holding ¼, ½, 1, 3 and 5 pounds. Made in sizes from 1/16″ up in twisted form, and from ⅛″ in braided form. Wrapped in special dust-proof containers.

SQUARE FLAX PACKING

The grade of flax packing to use depends upon the service required. If economy, satisfaction and freedom from frequent renewals are considerations, care in selection should be exercised. We aim to cover all demands for flax packing and the experience of users shows that we have succeeded.

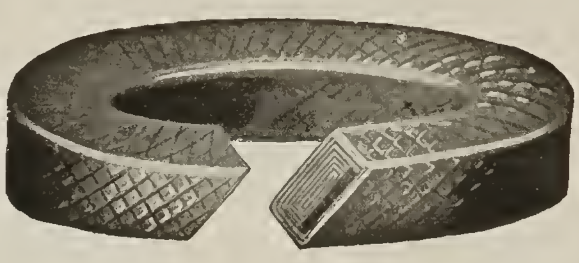
Flax packings, made in sizes 3/16″ and larger.

Furnished smaller than 3/16″ 10c a pound additional.

Put up in boxes or on reels from 25 to 100 pounds.

Style No.	
No. 405—Flax coil ¼″ and above, lb	$2.00
No. 405—Flax coil, under ¼″, lb.	3.25
No. 405—Flax coil, Dry, ¼″ and above, lb.	3.00
No. 405—Flax Ring ¼″ and above, lb.	3.00

HIGH PRESSURE PACKING



Ring Form Style No. 145

Made of pure asbestos fibre with a cushion of high grade compound. This packing is furnished with rubber back in sizes of ⅜″ and larger. Smaller sizes without rubber back.

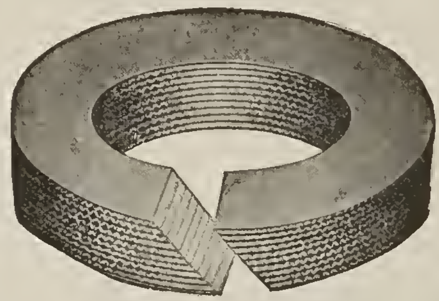
For triple expansion and tandem compound engines, high-pressure marine engines, steam feeds, gas engines, locomotives and high-speed engines; for superheated and high-pressure steam, and for rods running in oil, grease or acid.

Spiral Form, Style No. 146. Coil Form Style No. 147.

½″ and over, list price per pound, ... $2.00

Under ½″ prices on application.

RING PACKING



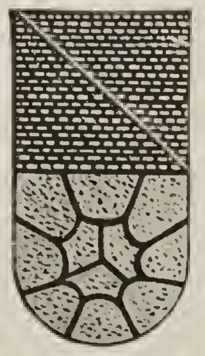
Style No. 190

For all general purposes this packing will be found in every way satisfactory. It embodies every good point that long experience has proved necessary for the absolute success of a packing of this class.

List Price per lb. $3.00

DANIEL'S P. P. P. ROD PACKING

Regular P. P. P.



Regular P.P.P.

The cushion of Regular P. P. P. is made of yielding, absorbent materials, which take up the oil that may be put on the rod or fed to the box by other means, and let down to the rod evenly and regularly.

For steam pressures of 100 lbs. or less; ordinary water pressures, cold or warm; low ammonia pressures, valve stems, etc.

When P. P. P. is required for ammonia rods, always state so, as ammonia packing is especially prepared for that purpose.

STYLE P. P. P.

For steam pressures over 100 pounds (when not superheated); high ammonia pressures; high hydraulics, very hot water; air pumps, valve stems, etc.

Made to order in sets ready to place in stuffing box. All sizes from $\frac{3}{16}$ of an inch up.

When P. P. P. is required for ammonia rods, always state so, as ammonia packing is especially prepared for that purpose.
List price, per lb. $1.25

FINE DUCK PACKING

CRANDALL'S HOT WATER HYDRAULIC STYLE NO 6

No. 6 Victor

Packing designed for service against all pressures of hot or cold water on inside packed pumps, as well as on elevator plungers. Made of fine white duck of highest quality.

(All sizes ¼ inch to 2 inches square by sixteenths)
Victor No. 7 is No. 6 rock hard for service against high pressure and temperatures.

Victor No. 8 is No. 6 with one or more rows of stitches to add strength.

Victor No. 2 is fine duck with a dark compound for ordinary Pump Piston Work.

Victor No. 3 is a square rubber back duck packing for use on elevators and hydraulic work.

Victor No. 4 is the same as Victor No. 3, except made round.

(All above are furnished in 15-foot lengths)

Style No		Per Lb.
Style No.		
2	Duck Packing	$1.50
3	Duck Packing	2.00
4	Duck Packing	2.00
6	Duck Packing	2.00
7	Duck Packing	2.00
8	Duck Packing	2.00

Above are list prices

WATER-PROOF HYDRAULIC FLAX PACKING

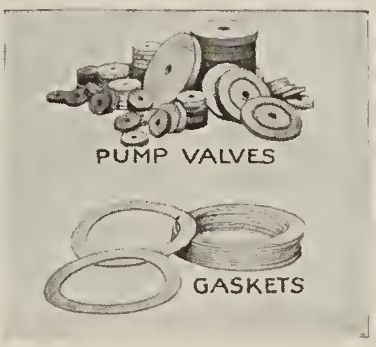
CRANDALL'S FLAX

A braided ring, shaped square, with bevel on outside edges, made of highest quality long fibre flax. For use on cold water pistons, outside packed plungers, elevators, or pumps handling cold oil, cold brine, etc. A substantial hydraulic packing which gives excellent results on many different applications. As it is treated with our special flax-hydraulic compound it resists cold liquids and has long life.

Victor No. 50 Ring	$3.00 Lb.
Victor No. 55 Coil	3.50 Lb.
Victor No. 58 Spiral	3.50 Lb.

List Prices

RUBBER PUMP VALVES



No. 1234 This valve is without exception the best valve on the market. Of medium hard stock, light weight and for cold water up to 150 pounds pressure, or warm water up to 170 degrees this valve cannot be equalled. It is one of our most popular sellers, and a valve that stands the test.

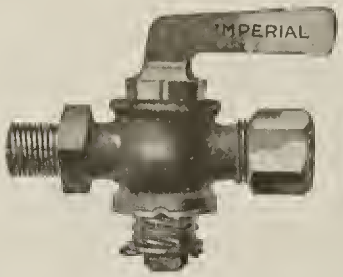
No. 211 Medium hard valve, for cold water up to 125 pounds pressure or warm water up to 140 degrees.

No. 902 A satisfactory valve for cold water up to 100 pounds pressure.

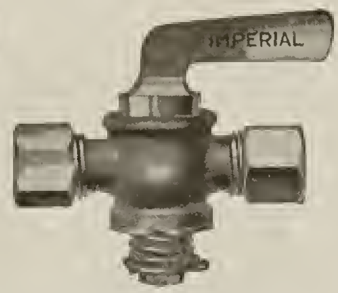
No. 2458 Medium gray valve for warm water up to 140 degrees and where pressure does not exceed 40 pounds.

Prices furnished on application.

SHUT-OFF COCKS



Nos. 27-EF, 29-EF,
57-EF

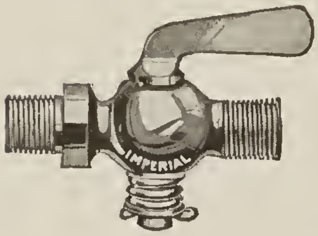


Nos. 28-EF, 30-EF, 58-EF

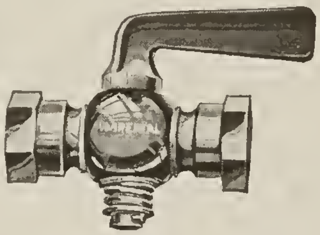
Bright Dipped Finish

No. 27-EF—¼ in O. D. Tubing x ⅛ in. I. P. T.
No. 29-EF—5/16 in O. D. Tubing x ⅛ in. I. P. T.
No. 57-EF—⅜ in O. D. Tubing x ¼ in I. P. T.
No. 28-EF—¼ in. O. D. Tubing.
No. 30-EF—5/16 in O. D. Tubing.
No. 58-EF—⅜ in O. D. Tubing.

Nos.	27-EF	29-EF	57-EF	28-EF	30-EF	58-EF
Each	$1.03	1.05	1.14	1.14	1.14	1.20



No. 76-E

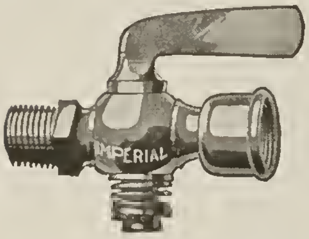


Nos. 31-E and 32-E

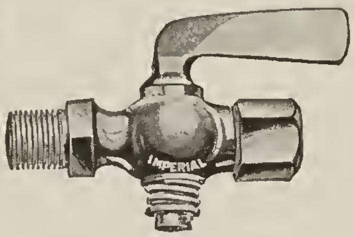
Polished Brass Finish

No. 76-E—⅛ in. I. P. T., Male.
No. 31-E—⅛ in. I. P. T., Female.
No. 32-E—¼ in. I. P. T., Female.

Nos.	76-E	31-E	32-E
Each	.72	.74	.86



Nos. 48-E and 49-E

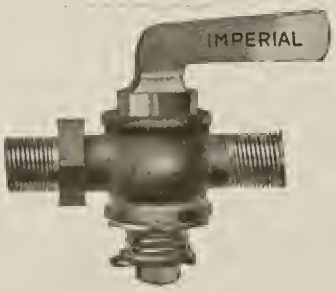


No. 75-EF

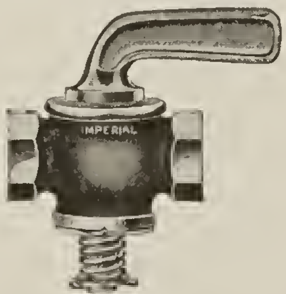
Polished Brass Finish

No. 48-E—⅛ in. I. P. T., Male and Female.
No. 49-E—¼ in. I. P. T., Male and Female.
No. 75-EF—5/16 in. O. D. Tubing x ⅛ in. I. P. T., Male

Nos.	48-E	49-E	75-EF
Each	.74	86	.65



No. 87-E



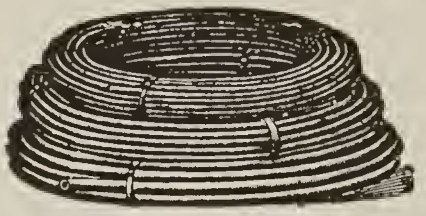
No. 39-E

Bright Dipper Finish

No. 87-E—⅛ in., I. P. T., Male.
No. 39-E—¼ in., I. P. T., Female.

Nos.	87-E	39-E
Each	.86	1.28

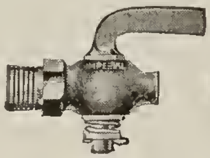
COPPER TUBING



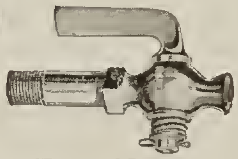
No. 20 gauge soft copper tubing for gas lines.

O. D., ins.	⅛	3/16	¼	5/16	⅜	½
Approx. wt. per 100 ft., lbs.	3	6½	8½	11	14½	19¾
Per lb.	$1.90	1.50	1.32	1.26	1.20	1.14

DRAIN COCKS FOR RADIATORS



Nos. 41E and 42E



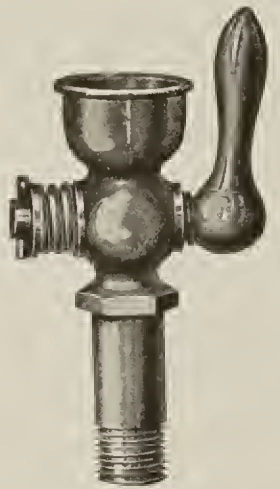
No. 20E

Made entirely of brass. Shank has iron pipe thread.

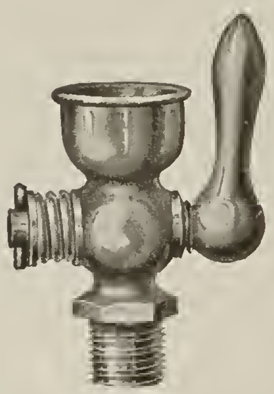
No.	41E	42E	20E
Shank, ins.	⅛	¼	⅛
Each	$ .40	.44	.50

No.20E has extra long shank.

BRASS PRIMING CUPS



No. 142

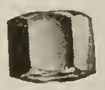


No. 141

COMPRESSION COUPLINGS

Compression Couplings are the quickest and most effective means of connecting up tubing for Gasoline, Oil, and Air Lines. Their adoption as standard by many leading manufacturers is due to ease of installation—no soldering, flaring or threading being necessary—and the fact that they make up absolutely tight. The only tools required are two wrenches. Simply insert end of the tubing through the nut and sleeve, as shown in illustration herewith, and then insert tubing into body of fitting so that end of tube seats. Next tighten up the nut on the fitting. The double grip of the sleeve on the tubing thus obtained makes an absolutely tight joint.

No. 60F Sleeve

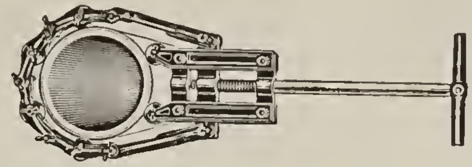


No. 61F Nuts

Size, ins.	3/16	¼	5/16	⅜
No. 60F—Sleeve per 100,	$1.72	2.00	2.24	2.92
No. 61F—Nuts, per 100	4.60	5.40	7.20	8.60

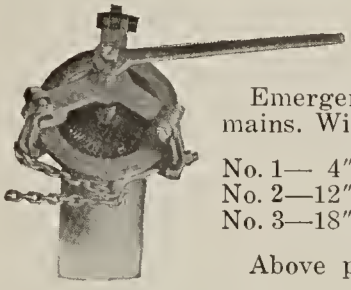
THE "ELLIS" PIPE CUTTER

For cutting pipe in close quarters. Six discs cut the pipe with only a 60 degree turn. The best tool for cutting large pipe in the ditch.



No. 01—Cuts 4″ to 8″ pipe	$50.00
No. 1—Cuts 4″ to 12″ pipe	65.00

THE "ELLIS" PIPE CLAMP



For Use in Testing

Emergency clamps for closing water mains. Will hold 200-lb. pressure.

No. 1— 4″ to 10″ pipe	$45.00
No. 2—12″ to 16″ pipe	75.00
No. 3—18″ to 24″ pipe	85.00

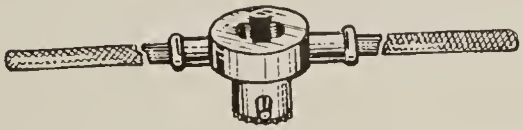
Above prices F. O. B. factory

PIPE STOCKS AND DIES

Armstrong type; Japanned malleable iron stock; polished steel handles adjustable dies; right-hand thread; single end dies.

Nos.	1	2
Threads Pipe, inches	⅛ to ½	¼ to 1
Length, inches	35	35½
No. of Dies	4	5
Weight	5	13
List	$9.00	$12.00

LITTLE GIANT STOCKS AND DIES



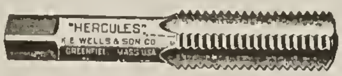
Japanned malleable iron stocks, with removable tubular steel handles, knurled to prevent slipping; two piece adjustable dies, can be resharpened and are adjustable for wear. Dies are inserted in stock from back and guide screwed in, outside edges of dies, being beveled to fit beveled chamber in stock, holding dies solidly.

Single Stocks, Dies and Guides, Complete
Right Hand Threads

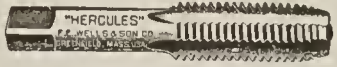
No.		280	281	282
Pipe size, ins.		⅛	¼	⅜
Length, ins.		9½	14	22
Net wt. each, lbs.		2	3	4
Each		$3.60	3.60	4.80
No.	283	284	285	286
Pipe size, ins.	½	¾	1	1¼
Length, ins.	25	32	36	40
Net. Wt. each, lbs.	6	8	8½	9
Each	$4.80	6.00	6.00	7.80

MACHINISTS' HAND TAPS

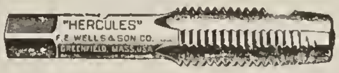
Open stock; United States standard threads recommended and furnished unless otherwise ordered. Left-hand threads are special. Sizes and threads not listed are special.



Bottoming



Plug

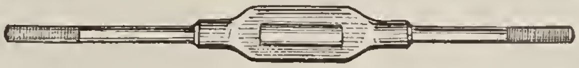


Taper

	Size	Threads Per Inch	List Each
No. S.A.E.	3/16	32	.40
No. U.S.S.	3/16	24	.40
No. S.A.E.	¼	28	.45
No. U.S.S.	¼	20	.45
No. S.A.E.	5/16	24	.50
No. U.S.S.	5/16	18	.50
No. S.A.E.	⅜	24	.55
No. U.S.S.	⅜	16	.55
No. S.A.E.	7/16	20	.60
No. U.S.S.	7/16	14	.60
No. S.A.E.	½	20	.70
No. U.S.S.	½	13	.70
No. S.A.E.	9/16	18	.80
No. U.S.S.	9/16	12	.80
No. S.A.E.	⅝	18	.90
No. U.S.S.	⅝	11	.90
No. S.A.E.	¾	16	1.20
No. U.S.S.	¾	10	1.20
*No. S.A.E.	⅞	14-18*	1 60
No. U.S.S.	⅞	9	1 60
No. S.A.E.	1	14	2.00
No. U.S.S.	1	8	2.00

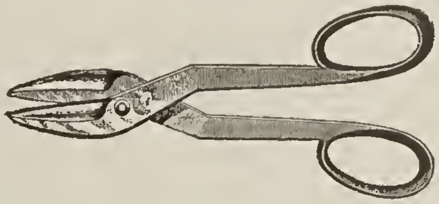
* Standard Spark Plug Size.

TAP WRENCH



No. 7—Adjustable Tap and Reamer Wrench; capacity, Tap sizes, hand, ⅜ to 1, Machine Screw, 15 to 30, pipe ⅛ to ¾; length 19 inches; weight 3½ lbs. List ea. . . $8.00

SNIPS



Buffalo; for curves and straight cuts; rounded back blades; drop forged and refined iron tool steel inlaid blades; Japanned handles.

Nos.	17	18	19
Length, Inches	14½	12	12¼
Cuts, Inches	4	3½	3
List Price, per pair	5.50	4.70	4.30

COMBINATION CUTTING SNIPS

Designed for cutting out intricate patterns and curves. Solid forged steel. Hardened and tempered. Polished blades. Blue enameled handles.

Nos.	T47	T412
Length, ins.	7	12
Cut. ins.	1¾	3
Wgt., each. ozs.	7	25
Each	$1.24	1.96

PRICE LIST—WROUGHT PIPE

Black and Galvanized
As adopted January 1, 1913

Diameter Size Inches	Price Per Foot	Nominal weight Per Foot Plain Ends	Nominal Weight Per Foot Threaded and Coupled
⅛	.05½	.244	.245
¼	.06	.424	.425
⅜	.06	.567	.568
½	.08½	.850	.852
¾	.11½	1.130	1.134
1	.17	1.678	1.684
1¼	.23	2.272	2.281
1½	.27½	2.717	2.731
2	.37	3.652	3.678
2½	.58½	5.793	5.819
3	.76½	7.575	7.616
3½	.92	9.109	9.202
4	1.09	10.790	10.889
4½	1.27	12.538	12.642
5	1.48	14.617	14.810
6	1.92	18.974	19.185
7	2.38	23.544	23.769
8	2.50	24.696	25.000
8	2.88	28.554	28.809
9	3.45	33.907	34.188
10	3.20	31.201	32.000
10	3.50	34.240	35.000
10	4.12	40.483	41.132
11	4.63	45.557	46.247
12	4.50	43.773	45.000
12	5.07	49.562	50.706

WROUGHT NIPPLES

Close

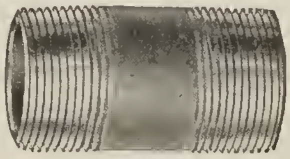

Shoulder

Table of sizes and lengths kept in stock.

Black—Right Hand

	Length, Inches						Prices	
Size Inches	Close	Short	Long				Close or Short	Long
⅜	1	1½	2	2½	3	3½	.04	.06
½	1⅛	1½	2	2½	3	3½	.05	.07
¾	1⅜	2	2½	3	3½	4	.06	.09
1	1½	2	2½	3	3½	4	.08	.13
1¼	1⅝	2½	3	3½	4	4½	.11	.17
1½	1¾	2½	3	3½	4	4½	.13	.20
2	2	2½	3	3½	4	4½	.18	.27
2½	2½	3	3½	4	4½	5	.39	.59
3	2⅝	3	3½	4	4½	5	.48	.72

Galvanized—Right Hand

	Length, Inches						Price	
Size Inches	Close	Short	Long				Close or Short	Long
⅜	1	1½	2	2½	3	3½	.06	.11
½	1⅛	1½	2	2½	3	3½	.06	.11
¾	1⅜	2	2½	3	3½	4	.08	.14
1	1½	2	2½	3	3½	4	.11	.19
1¼	1⅝	2½	3	3½	4	4½	.17	.29
1½	1¾	2½	3	3½	4	4½	.21	.35
2	2	2½	3	3½	4	4½	.27	.47
2½	2½	3	3½	4	4½	5	.56	.86
3	2⅝	3	3½	4	4½	5	.70	1.10

*These lengths conform to the manufacturers' standard. Nipples made to order from extra strong pipe at double the above lists.

MALLEABLE IRON CROSSES AND TEES

Cross

Tee

Straight and Reducing Crosses

Size, Inches	⅜	½	¾	1
Price, each	.10	.16	.20	.30
Price, Galvanized, each	.14	.25	.29	.45
Size, Inches	1¼	1½	2	2½
Price, each	.40	.60	1.00	1.75
Price, Galvanized, each	.60	.90	1.50	2.75

Straight and Reducing Tees

Size, Inches	¼	⅜	½	¾	1
Price, each	.08	.09	.11	.15	.25
Price, Galvanized, each	.10	.13	.16	.20	.38
Size, Inches	1¼	1½	2	2½	3
Price, each	.30	.45	.60	1.05	1.70
Price, Galvanized, each	.50	.70	1.00	1.90	3.00

Parties desiring R. and L. Tees will state, when ordering, which hole is to be tapped left hand. Such goods can always be furnished to order.

MALLEABLE IRON ELBOWS

Straight and Reducing

Size, Inches	¼	⅜	½	¾	1
Price, R. H., each	.07	.08	.10	.15	.22
Price, R. and L., each	.09	.11	.13	.17	.25
Price, galvanized, R. H., each	.09	.11	.14	.20	.32
Price, R. and L., galvanized, each	.12	.16	.17	.23	.35
Size, Inches	1¼	1½	2	2½	3
Price, R. H., each	.25	.35	.50	.90	1.50
Price, R. and L., each	.30	.40	.65		
Price, galvanized, R. H., each	.40	.60	.90	1.50	2.60
Price, R. and L., galvanized, each	.45	.65	1.00		

45° Elbows

Size, Inches	¼	⅜	½	¾	1
Price, each	.08	.10	.12	.18	.26
Price, galvanized, each	.12	.15	.20	.25	.40
Size, Inches	1¼	1½	2	2½	3
Price, each	.36	.54	.82	1.25	2.50
Price, galvanized, each	.50	.85	1.35	1.90	3.75

MALLEABLE IRON STREET ELBOWS

Size, Inches	⅜	½	¾	1	1¼	1½	2	2½	3
Price, 90°, each	.10	.12	.20	.25	.40	.55	.90	1.50	2.25
Price, galv., each	.12	.15	.28	.35	.55	.80	1.30	2.25	3.50
Price, 45°, each	.12	.12	.20	.25	.40	.55	.90		2.25
Price, 45° galv. each	.15	.15	.28	.35	.55	.80	1.30		3.50

CAST IRON STEAM AND GAS FITTINGS—ELBOWS

Straight

Reducing

45° Elbows

Straight Cast Iron Elbows

Size, Inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Price, R. H., each	.05	.05	.06	.08	.10½	.16	.20	.28	.50	.75
Price, R. and L.	.06	.06	.07	.09	.12	.18	.23	.32	.60	.85
Price, R.H., Galv.	.10	.10	.12	.16	.21	.32	.40	.56	1.00	1.50
Price, Pitched, ea.			.08	.10	.13	.20	.25	.35	.65	1.00

Pitched elbows are tapped, pitched ¼-inch to the foot. Right and left hand elbows have ribs on left hand end.

Cast Iron Reducing Elbows

Size, Inches	⅜	½	¾	1	1¼	1½	2	2½	3
Price, each	.06	.07	.09	.12	.18	.23	.32	.60	.85
Price, Galv., each		.14	.18	.24	.36	.46	.64	1.20	1.70
Price, pitched, each			.10	.13	.20	.25	.35	.65	1.00

45° Cast Iron Elbows

Size, Inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Price, 45°, each	.06	.06	.07	.10	.12	.19	.24	.34	.60	.90
Price, 45°, Galv.	.12	.12	.14	.20	.24	.38	.48	.68	1.20	1.80
Price, 60° or 22½°			.25	.30	.35	.45	.50	.60	1.10	1.65

LIST OF SIZES STANDARD CAST IRON FITTINGS

In arranging the order of cast iron fittings we will use the following rule: For example, it is well known the largest opening, either in the run or branch determines the size of the fitting. A ¾x¾x1¼ Tee will, therefore, be found amongst the 1¼ inch fittings. Of course, these remarks apply to all sizes and combinations.

In describing Fittings, the run is first named, then the outlet.

ELBOWS

Elbow Size	Reducing Elbow Size	45° Elbow Size
* ¼x ¼	*2 x2	4 x2½
* ⅜x ⅜	*2 x1½	4 x2
⅜x ¼	*2 x1¼	*4½x4½
* ½x ½	*2 x1	4½x4
* ½x ⅜	*2 x ¾	*5 x5
½x ¼	*2½x2½	5 x4½
* ¾x ¾	*2½x2	5 x4
* ¾x ½	2½x1½	5 x3
¾x ⅜	2½x1¼	5 x2½
*1 x1	2½x1	*6 x6
*1 x ¾	*3 x3	6 x5
1 x ½	3 x2½	6 x4
1 x ⅜	*3 x2	*7 x7
*1¼x1¼	3 x1½	7 x6
1¼x1	3 x1¼	*8 x8
1¼x ¾	*3½x3½	8 x7
1¼x ½	3½x3	8 x6
1¼x ⅜	3½x2½	*9 x9
*1½x1½	3½x2	*10 x10
*1½x1¼	*4 x4	10 x 8
1½x1	4 x3½	*12 x12
1½x ¾	*4 x3	

45° Elbows

Size, Inches *¼ *⅜ *½ *¾ *1 *1¼ *1½ *2 *2½ *3
Size, Inches *3½ *4 *4½ *5 *6 *7 *8 *9 *10 *12

60° and 22½° Elbows

Size, Inches.. ½ ¾ 1 1¼ 1½ 2 2½ 3 4 5 6

Pitched Elbows

Size, Inches—½; ¾x½; ¾; 1x¾; 1; 1¼x1; 1¼; 1½x1; 1½x1¼; 1½; 2x1½; 2; 2½x2; 2½; 3x2½; 3; 3½x3; 3½; 4.

Right and Left Elbows

Size, Inches.... ¼ ⅜ ½ ¾ 1 1¼ 1½ 2 2½ 3

Such sizes as are marked with an * are carried in stock galvanized.

CAST IRON TEES

Straight

Reducing

Reducing Cast Iron Tees

Size, Inches	½	¾	1	1¼	1½	2	2½	3
Price, each	.10	.14	.17	.27	.33	.47	.83	1.25
Price, Galv., each	.20	.28	.34	.54	.66	.94	1.66	2.50

Straight Cast Iron Tees

Size, Inches	½	¾	1	1¼	1½	2	2½	3
Price, each	.09	.12	.15	.23	.29	.41	.73	1.10
Price, Galv., each	.18	.24	.30	.46	.58	.82	1.46	2.20

CAST IRON CROSSES AND REDUCERS

Straight

Reducing Cross

Straight Cast Iron Crosses

Size, Inches	½	¾	1	1¼	1½	2	2½	3
Price, each	.16	.22	.27	.42	.53	.75	1.30	2.00
Price, Galvanized, ea.	.32	.44	.54	.84	1.06	1.50	2.60	4.00

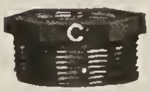
Cast Iron Reducing Crosses

Size, Inches	½	¾	1	1¼	1½	2	2½	3
Price, each	.18	.25	.30	.46	.60	.83	1.45	2.20
Price, Galvanized, ea.	.36	.50	.60	.92	1.20	1.66	2.90	4.40

Cast Iron Reducers

Size, Inches.	4½	5	6	7	8	9	10	12
Price, each	1.85	2.00	2.70	5.35	6.75	8.35	10.00	15.00
Price, Galv.	3.70	4.00	5.40	10.70	13.50	16.70	20.00	30.00

CAST IRON BUSHINGS PLUGS AND CAPS


Bushings

Square Head Plugs

Caps

Cast Iron Bushings

Reducing two or more sizes, up to 2½ inch, inclusive.

Size, Inches	½	¾	1	1¼	1½	2	2½	3
Price, each	.04	.05	.06	.07	.09	.14	.21	.30
Price, Galvanized, each	.08	.10	.12	.14	.18	.28	.42	.60

Cast Iron Plugs; Square Head

Size, Inches	½	¾	1	1¼	1½	2	2½	3
Price, each	.02	.03	.04	.05	.07	.10	.18	.25
Price, Galvanized, each	.04	.06	.08	.10	.14	.20	.36	.50
Pr. tapped for air cock, ea.		.12	.15	.20	.25	.30		
Price, L. H. Plugs, each	.04	.06	.08	.09	.11	.15		
Price, Solid Plugs, each	.04	.06	.08	.09	.11	.15	.27	.38

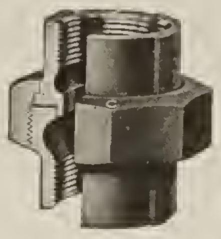
Cast Iron Caps

Size Inches	4	4½	5	6	7	8	9	10
Price, each	.87	1.05	1.20	1.55	2.50	2.85	4.75	5.50
Price, Galv., each	1.74	2.10	2.40	3.10	5.00	5.70	9.50	11.00

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

STANDARD MALLEABLE IRON UNIONS

Female Union



No. 519 Female Ends

Malleable Iron

For steam working pressures up to 150 pounds; gasket type; gasket extra.

Size, Inches	½	¾	1	1¼
Female Union, Black, each	.22	.27	.33	.46
Female Union, Galvanized, each	.33	.40	.50	.70
Size, Inches	1½	2	2½	3
Female Union, Black, each	.58	.75	1.55	2.10
Female Union, Galvanized, each	.90	1.15	2.35	3.15

MALLEABLE IRON BRASS TO IRON SEAT UNIONS

Malleable ends. Malleable octagon ring.

No. 519—Railroad unions for steam working pressures as follows: ⅛ to 3-inch, inclusive, 250 pounds.

Tested to 250 pounds hydraulic pressure.

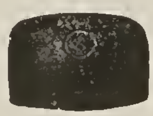
Size, Inches	¼	⅜	½	¾	1
Price, each	.30	.40	.50	.60	.80
Price, Galvanized, each	.45	.60	.75	.90	1.20
Size, Inches	1¼	1½	2	2½	3
Price, each	1.20	1.60	2.00	3.20	4.80
Price, Galvanized, each	1.80	2.40	3.00	4.80	7.20

Our brass to iron seat unions have been examined and tested by the underwriters' laboratories and listed by the consulting engineers of the National Board of Fire Underwriters.

REDUCERS, CAPS AND BUSHINGS

Reducer

Bushing



Cap

Malleable Iron Reducers

Size, Inches	½	¾	1	1¼
Price, each	.07	.10	.16	.20
Price, Galvanized, each	.10	.15	.25	.35
Size, Inches	1½	2	2½	3
Price, each	.28	.45	.70	1.00
Price, Galvanized, each	.45	.75	1.05	1.65

Malleable Iron Bushings

Shoulder; reducing one size only.

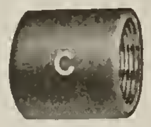
Size, Inches..	¼	⅜	½	¾	1	1¼	1½	2	2½
Price, each ...	.04	.04	.04	.05	.06	.07	.09	.14	.21
Price, Galv, ea.	.08	.08	.08	.10	.12	.14	.18	.28	.42

Malleable Iron Caps

Size, Inches	⅛	¼	⅜	½	¾	1	1¼	1½
Price, each	.03	.03	.04	.05	.08	.12	.16	.24
Price, Galv., each	.04	.04	.05	.08	.12	.17	.24	.38
Size, Inches	2	2½	3	3½	4	5	6	
Price, each	.32	.45	.85	1.00	1.20	2.50	3.50	
Price, Galv., each	.52	.76	1.30	1.60	2.00	3.50	5.00	

We can furnish "Hexagon" Malleable Caps, sizes ¼, ⅜ and ½-inch, at a special price.

WROUGHT COUPLINGS



Car Heater

	Actual		PRICE			
Size Inches	Outside Diam. Inches	Lgth. of Coup. Inches	R.H. Black Each	R. and L. Black Each	R.H. Galv. Each	R. and L. Galv. Each
½	1⅛	1⅞	.14	.20	.20	.25
¾	1 7/16	2⅛	.20	.30	.25	.35
1	1⅝	2⅜	.26	.40	.32	.45
*1¼	2⅛	2⅛	.34	.45	.42	.55
1½	2 5/16	2⅞	.42	.55	.55	.70
2	2 13/16	3⅛	.56	.70	.75	.90

*Special Short Pattern.

CRANE CEMENT

CRANE CEMENT
FOR STEAM FITTERS
CRANE CO.
836 S. MICHIGAN AVE
CHICAGO
INDIANAPOLIS
KANSAS CITY
KNOXVILLE
LITTLE ROCK
LOS ANGELES
MEMPHIS
MINNEAPOLIS
MUSKOGEE

For Making Tight Pipe Joints

Put up in one, five, ten and twenty-pound cans, mixed and ready for use. One-pound cans furnished in cases containing 24 cans.

List Price 50 Cents per Pound

Crane Cement, now so thoroughly well known to the trade, has been constantly and exclusively used by us in our business for many years, and from our personal experience, we know it to be superior to Red or White Lead, and much more economical, being double in bulk.

Crane Cement reduces friction, so that metal to metal joints may be made more readily than with any other make of cement.

We had occasion to make tight joints in an eight-inch pipe line, so that they would stand 1,000 pounds air pressure. This we accomplished with the regular weight of line pipe and extra heavy couplings using Crane Cement.

Making absolutely tight joints at such pressure, is convincing proof of the superiority of this article.

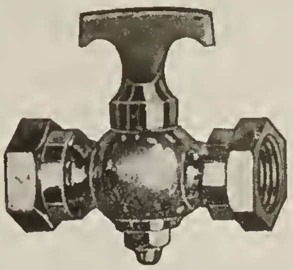
We have furnished Crane Cement in ton lots for extensive pipe line operations in the oil and gas fields.

The principle involved is to make tight joints, iron to iron, and, as stated before, Crane Cement has these merits. We therefore recommend it to the trade, knowing that it will accomplish satisfactory work.

Crane cement will always be furnished in one-pound cans, unless otherwise ordered.

STEAM GAUGE AND AIR COCKS

No. 700 Tee Handle



No. 712 Tee Handle

Tee or Lever Handle

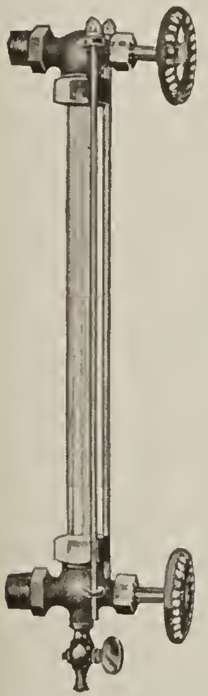
No. 700—Standard Pattern

Size, Inches	⅛	¼	⅜	½
No. 700, Tee Handle, Each	.40	.45	.50	.60

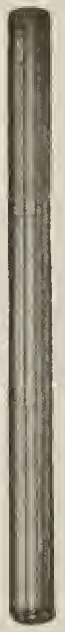
No. 712—Tee Handle

Size, Inches	⅛	¼	⅜
No. 712, Tee Handle, Female, Each	.75	.85	.95

WATER GAUGES AND GLASSES



No. 624



Glass

Brass; low pressure; iron wheels.

Size, Inches	½	¾
No. 610, Finished, each	5.50	8.00
No. 624, Rough, Bronzed, each	3.25	
Size of Glass, Inches	⅝x12	¾x16
Center to Center of Cocks, Inches	13⅝	18¼

AJAX GAUGE GLASSES

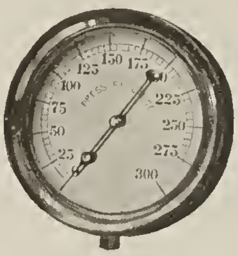
Particularly adapted to both high and low pressures; tested and approved by U. S. Navy.

Length, Inches	10	11	12	13	14	15	16
⅝ Inch, per dozen	3.00	3.24	3.60	3.84	4.20	4.44	4.80
¾ Inch, per dozen	3.60	3.96	4.32	4.80	5.16	5.52	5.88

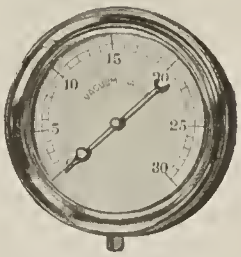
Length, Inches	17	18	19	20	22	24	30
⅝ Inch, per dozen	5.04	5.40	5.64	6.00	6.60	7.20	9.00
¾ Inch, per dozen	6.24	6.60	7.08	7.44	8.16	8.88	11.16

½ inch Glass Tubes same list as ⅝ inch.

SINGLE BOURDON SPRING PRESSURE AND VACUUM GAUGES



Pressure Gauge



Vacuum Gauge

Size Dial Inches	Iron Case with Brass Ring Each	Iron Case with N.P.Ring Each	Brass Case Each	Brass Case Nickel Plated All Over Each	Standard Graduations of Dial Pressures
12	50.00	51.50	75.00	79.00	
10	32.00	33.00	40.00	43.00	30–100–200
8½	22.00	22.75	30.00	32.50	300–500
6¾	16.00	16.60	20.00	22.00	
6	13.00	13.50	16.00	17.50	
5½	10.00	10.25	12.00	13.25	30–60–100
5	8.00	8.20	11.00	12.00	160–200–300
4½	8.00	8.20	10.00	11.00	500
3½	7.00	7.18	9.00	9.75	
3	6.00	6.15	8.00	8.60	30–60–100
2½	6.00	6.15	8.00	8.60	160–200–300
2	6.00	6.15	8.00	8.60	

Unless otherwise specified, Iron Case Gauge with Brass Ring will always be furnished.

Double Bourdon Spring Gauges: Prices on application.

Above prices, 3-inch and larger, include cocks with each gauge. On smaller sizes, cocks will be furnished at an extra price.

No Steam Gauge warranted unless properly connected with Syphon.

When ordering, do not fail to state: size dial and style of gauge; also the maximum pressure to which the dial is to be graduated. Graduations ordered other than specified in above table of Standards, will be considered special and an extra price charged.

Vacuum gauges, unless otherwise specified, will always be furnished graduated to 30 inches. They can be graduated to equivalent in pounds, instead of inches, if so stated when ordering.

Extra charge made for name on dials.

SYPHON FOR STEAM GAUGES

Size, Inches	¼
Price, length 8 inches, Iron, each	.50
Price, length 8 inches, Brass, each	1.00

BRASS HYDRAULIC RELIEF VALVES

For Water and Oil Service

No. 1128

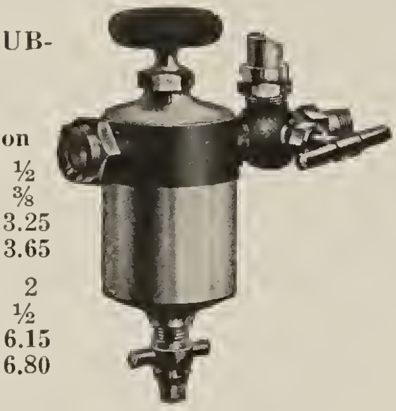
When ordering, always specify the number and state the pressure, at which valves are wanted set to relieve.

No. 1128 Valves will be set at any pressure specified up to 600 pounds, the maximum working pressure not to exceed 500 pounds. This style of Valve is furnished with a female base and is especially adapted for high pressure service, such as Boiler Feed Lines, Paver Lines, etc.

Size, Inches ..	½	¾	1	1¼	1½	2	2½
No. 1128 Fin..	25.00	25.00	30.00	35.00	40.00	55.00	100.00

SWIFT SIGHT FEED LUBRICATORS

Class F



Class F—Double Connection

Capacity, pints..	¼	⅓	½
Pipe Thread, in..	⅜	⅜	⅜
Brass Finish, ea.	2.75	3.00	3.25
Nickel plated, ea.	3.15	3.40	3.65

Capacity, pints..	1	1½	2
Pipe Thread, in..	½	½	½
Brass Finish, ea.	4.65	5.40	6.15
Nickel plated, ea.	5.30	6.05	6.80

IMPROVED STANDARD DETROIT SIGHT-FEED LUBRICATORS

Improved Standard Single Connection

Improved Standard Double Connection

STYLE C

For Stationary Engines

PRICE, SINGLE CONNECTION

Size	⅓ Pt.	½ Pt.	1 Pt.	1 Qt.
Brass Finish, Each...	17.00	20.00	23.00	28.00
Nickel Plated, Each...	20.00	23.00	26.00	30.00

PRICE, DOUBLE CONNECTION

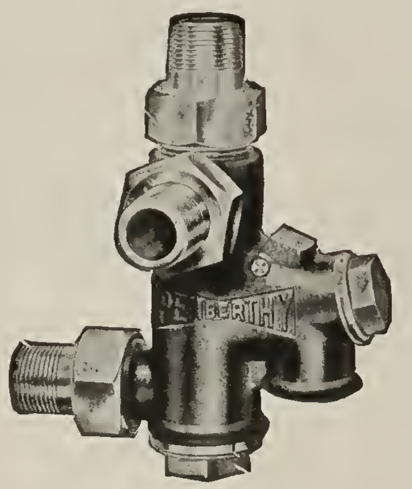
Size ...	⅓ Pt.	½ Pt.	1 Pt.	1 Qt.	½ Gal.
For Cylinder	10 inch & under	10 to 12 inch	12 to 18 inch	18 to 30 inch	30 inch & over
Brass Finish, each	17.00	22.00	30.00	45.00	60.00
Nickel Plated, ea.	20.00	25.00	35.00	50.00	65.00

SIZE OF GLASSES USED

Sight Feed.	⅝x2$\frac{1}{16}$	¾x3	¾x3	¾x3¼	¾x3¼	¾x3¼
Gauge	⅝x2$\frac{1}{16}$	⅝x3¼	⅝x4⅜	⅝x4⅜	¾x6	¾x7¾

Sight Feed and Gauge Glasses, each, net............ .10

PENBERTHY AUTOMATIC INJECTOR



Style Left and Back

To Start—Open full the globe valve in water supply first, and then globe valve in steam pipe.If water issues from overflow, throttle the water supply valve until discharge stops.

To Stop—Close the steam valve. The water valve need not be closed unless the Injector is used as a non-lifter, or lift is considerable.

No. 47—STOCK INJECTOR

Suction left—overflow front—discharge back.

Order by Size No.	Price	Pipe Connections all around Inches	Cap. per hour 1 to 3 ft. lift, 60 to85 Lbs. Steam Pressure Maximum Gallons	Minimum Gallons	Nominal Horse-power
O	15.00	¼	60	35	3 to 6
OO	16.00	⅜	80	45	4 to 8
A	18.00	½	135	70	8 to 16
AA	20.00	½	180	100	12 to 22
B	25.00	¾	260	140	17 to 32
BB	30.00	¾	360	180	20 to 45
C	40.00	1	475	250	40 to 65
CC	45.00	1	600	325	45 to 80
D	55.00	1¼	800	425	50 to 100
DD	60.00	1¼	1000	525	75 to 135
E	75.00	1½	1400	740	100 to 180
EE	90.00	1½	1900	850	115 to 255
F	110.00	2	2400	1275	160 to 320
FF	125.00	2	3000	1600	200 to 400
G	150.00	2½	3600	1875	300 to 500
GG	200.00	2½	4200	2150	375 to 600

The capacity can be cut down about one-half by simply throttling the water supply Valve.

Where Injectors are ordered by size of pipe connections, we will always send the size having the largest capacity.

COMPRESSION GAUGE COCKS

No. 730—Short Pattern

No. 730—For steam working pressures up to 125 pounds.

Size, Inches ...	⅜	½	¾
No. 730—Each ...	.95	1.00	
No. 732—Each ...		1.20	1.35

CRANE STANDARD GLOBE AND ANGLE VALVES

No. 1 Globe

No. 2 Angle

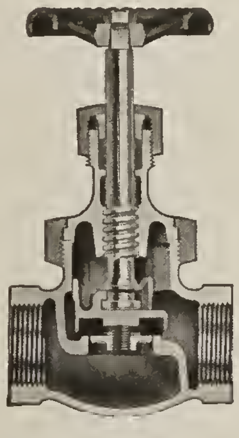
Brass; for steam working pressures, up to 125 pounds.

Size, inches	¼	⅜	½	¾	1
No. 1, Globe, each	.72	.77	1.00	1.26	1.80
No. 2, Angle, each	.72	.77	1.00	1.26	1.80

Size, inches	1¼	1½	2	2½	3
No. 1, Globe, each	2.52	3.50	5.30	10.00	14.40
No. 2, Angle, each	2.52	3.50	5.30	10.00	14.40

These Valves, when wide open, may be repacked while under pressure.

CRANE RENEWABLE DISC GLOBE AND ANGLE VALVES



No. 7 Globe

No. 7 Angle

Brass; union bonnet with malleable iron ring for steam working pressures up to 150 pounds.

In ordering state whether Globe or Angle Valves are wanted.

Size, inches	½	¾	1	1¼	1½	2	2½	3
No. 7, screwed	1.60	2.20	2.80	4.00	5.50	8.75	15.75	22.00

These Valves are fitted with Crane Renewable Steam Discs, suitable for use on Saturated Steam pressures up to 150 pounds.

When Valves are wanted for hot water service, they will be furnished with Crane Renewable Hot Water Discs at the same price.

When Valves are wanted for cold water service, they will be furnished with Crane Renewable Cold Water Discs at the same price.

When these Valves are ordered for compressed air service, they are given a special test before shipping and are furnished at a special price.

Crane Steam Discs always will be furnished unless otherwise specified.

CRANE STANDARD HORIZONTAL CHECK VALVES

No. 20 Horizontal

No. 24 Vertical

Brass; for steam working pressures, up to 125 pounds.

No. 20 Horizontal

Size, inches	½	¾	1	1¼
No. 20, Horizontal, screwed, ea.	.90	1.15	1.60	2.25
Size, Inches	1½	2	2½	3
No. 20, Horizontal, screwed, ea.	3.15	4.75	9.00	13.00

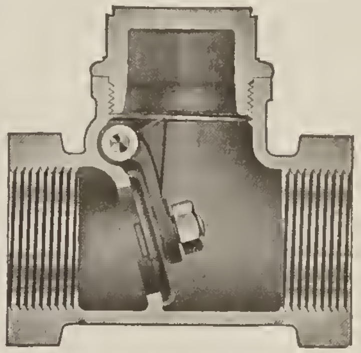
No. 24, Vertical

Size, Inches	½	¾	1		
Price, No. 24, vertical screwed, ea.	1.00	1.26	1.80		
Size, Inches	1¼	1½	2	2½	3
Price, No. 24, vertical, screw	2.52	3.50	5.30	10.00	14.40

The vertical check valve is for use in lines with upward flow. It is installed with the inlet side down.

STANDARD HORIZONTAL AND SWING CHECK VALVES

No. 28 Horizontal with Drip Cock



No. 34 Swing

Brass; recommended for steam working pressures up to 125 pounds.

No. 28 Horizontal

Size, Inches	½	¾	1	1¼
No. 28, with Drip Cock, Each.	2.15	2.55	3.15	4.05

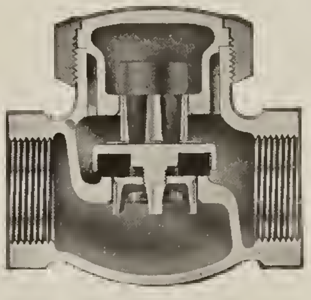
No. 34 Swing

Brass disc; for steam working pressures up to 125 pounds. For water working pressures up to 175 pounds.

Size, Inches..	½	¾	1	1¼	1½	2	2½	3
No. 34, Each.	2.00	2.25	2.80	3.65	4.75	6.75	15.00	24.00

May be used in a horizontal position or for upward flow.

CRANE RENEWABLE DISC HORIZONTAL CHECK VALVES



No. 27 Horizontal

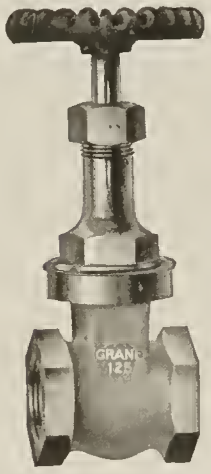
No. 27 Angle

Brass; union bonnet with malleable iron union ring. For steam working pressures up to 150 pounds.

Size, Inches....	½	¾	1	1¼	1½	2	2½	3
No. 27, screwed	1.30	1.90	2.60	3.60	5.00	7.50	13.50	20.50

When ordering, state whether horizontal or angle valves are wanted.

STANDARD DOUBLE DISC GATE VALVES



No. 440

Brass; parallel seats, rising stem. For steam working pressures up to 125 pounds.

Size, inches	⅜	½	¾	1	1¼	1½
No. 440, screwed, each	1.45	1.65	2.05	2.80	3.70	5.00

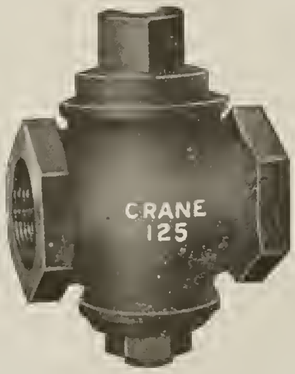
Size, Inches	2	2½	3
No. 440, Screwed, Each	7.30	13.00	19.00

These Valves are constructed with Parallel Seats and the bearing of the Wedging device acts uniformly on all parts of the discs, insuring an equal bearing on all parts of the faces of the discs against the seats.

They are tested under steam pressure, and we have at various times subjected them to a hydraulic pressure of 400 to 700 pounds, without leaking, but we do not recommend them for more than the steam working pressures as stated above.

These valves when wide open may be repacked while under pressure.

CRANE STANDARD IRON COCKS WITH BRASS PLUG



For liquid working pressures up to 125 pounds.

No. 324—Brass Plug

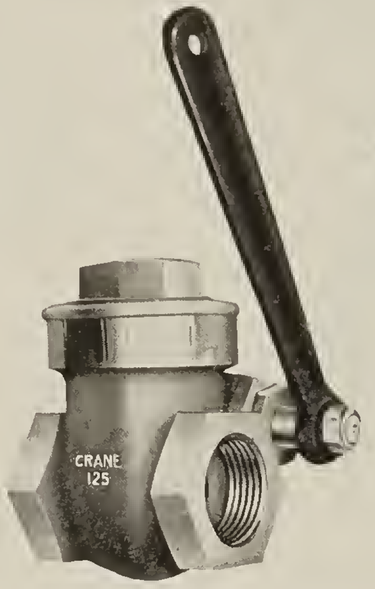
Size, Inches	½	¾	1	1¼	1½	2	2½	3
No. 324, screwed	1.30	1.60	1.90	2.65	3.75	5.25	8.75	13.00
*Add to list for brass washer	10	.15	.25	.35	.40	.50	.75	1.00

Sizes ½ inch to 2 inch will always be furnished with the Flat Head and sizes 2½ inch to 8 inch with the Square Head, unless otherwise ordered.

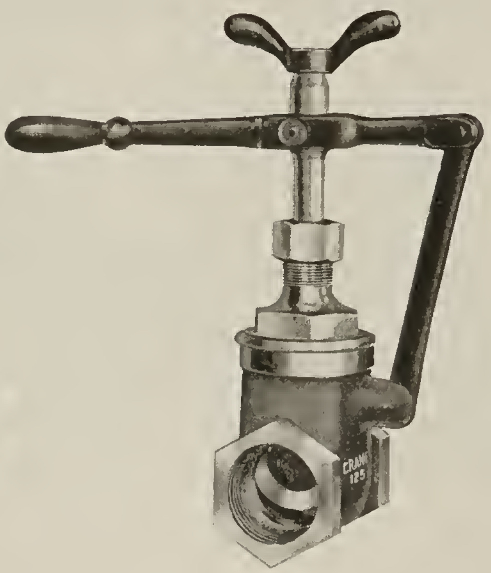
These Cocks will be furnished with a Check (stop) when so ordered, at a special price.

*Iron Cocks with Brass Plug and Brass Washer are not carried in stock.

CRANE QUICK OPENING BRASS GATE VALVES



No. 442. With Parallel Seats, Double Discs, Sliding Stem.



No. 442½. With Taper Seats, Double Wedging Discs, Rotating Stem.

For steam working pressures up to 125 pounds.

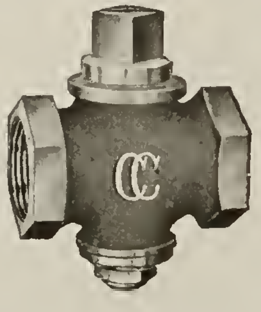
Size, Inches	½	¾	1	1¼	1½	2	2½	3
No. 442, Screwed, ea	3.60	4.80	6.20	8.50	11.80	20.25	30.00	
No. 442½, Screwed, ea.	3.50	3.60	4.80	6.20	8.50	11.80	20.25	30.00

These Valves are made with Screwed Ends only.

On the No. 442, the winged nut at top of the stem, locks the disc at any desired opening.

The No. 442½ Valves are so constructed that they may be installed in pipe lines where the space is limited, and the construction is such as to eliminate the likelihood of the discs binding or sticking when installed in any position.

CRANE STANDARD STEAM COCKS



Brass; for steam working pressures up to 100 pounds.

No. 250 Square Head

Size, Inches	⅜	½	¾	1	1¼
No. 250, each	1.00	1.25	1.70	2.35	3.70

Size, Inches	1½	2	2½	3
No. 250, each	4.85	7.30	14.50	22.50

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

STANDARD ALL-IRON OR BRASS MOUNTED CLAMP GATE VALVES

No. 488—Screwed

Wedge gate, rising stem; for steam working pressures up to 125 pounds.

Size, Inches....	½	¾	1	1¼	1½	2	2½	3
No. 488 All- Iron, Screwed, each	2.00	2.35	2.50	3.50	5.00	7.50	12.00	15.00

These valves are recommended for use with compressed air and gasoline, as well as with steam, water, oil, etc.

These valves are extensively used in oil fields, gas fields, oil refineries, gas plants, benzol plants, mines, smelters, chemical plants, sugar plants, etc., in fact all classes of manufacturing plants.

These valves are inexpensive and serviceable and their construction is simple, durable and compact. The steel "clamp" which extends around the body of the valve and holds the bonnet securely in place may be easily removed, allowing free access to the interior of the valve for cleaning or repairing.

STANDARD BRASS POP SAFETY VALVES

No. 1152

No. A-1148

No. 1152—Set at any pressure specified from 5 to 125 Pounds

When ordering this style valve always specify No. 1152, and state the pressure valves are wanted set to blow off.

Size, Inches	½	¾	1	1¼	1½	2
Price, Each	8.00	8.00	10.00	12.00	15.00	23.00

These valves are made without the self-adjusting feature, and for ordinary purposes, where the uniform working pressure does not exceed 125 pounds.

Brass Pop Safety Valves for Air and Gas

No. A-1148—For receivers, pipe lines, etc., for specified pressures from 5 to 250 pounds.

Size, Inches...	½	¾	1	1¼	1½	2	2½
No. A-1148, ea..	10.75	10.75	13.00	15.00	19.00	27.50	44.50

Brass Pop Valves when ordered for service on compressed air or gas have special ground seats.

STANDARD WEDGE GATE VALVES

No. 460—Screwed

No. 461—Flanged

Iron body; non-rising stem; brass trimmings. For steam working pressures, up to 125 pounds.

Size, Inches....	2	2½	3	3½	4	4½	5
No. 460, screwed	10.00	11.50	14.00	17.00	19.00	24.00	27.50
No. 461, flanged	12.00	13.50	16.50	19.50	23.00	28.00	31.50

Size, Inches	6	7	8	9	10	12
No. 460, Screwed, ea.	32.50	45.00	54.00	76.00	90.00	125.00
No. 461, Flanged, ea.	36.50	49.00	58.00	81.00	95.00	133.00

CRANE FOOT VALVES

No. 394. Screwed

Iron body; leather disc; with strainer.

Size Inches	Size Milli-meters	Price No. 394, Screwed Each	Price No. 394, Gal-vanized Each	Larg-est O.D. No. 394 Inches	Total Height No. 394 Inches
¾	19	1.15	1.75	3¾	3¾
1	25	1.30	2.00	3¾	3¾
1¼	32	1.40	2.10	4⅛	4¼
1½	38	1.90	2.85	4¾	4¾
2	50	2.40	3.60	5½	5⅝
2½	64	3.30	5.00	6¼	6⅜
3	76	3.90	5.75	7	7⅛
3½	90	5.60	8.50	8⅞	9¼
4	100	7.30	11.00	8⅞	9¼
4½	113	10.50	15.75	10½	11¼
5	125	11.25	16.75	10½	11¼
6	150	14.75	22.00	11¾	12¼

These Valves, as constructed, insure free openings.

Can be furnished with Brass Disc in place of Leather Disc, or all Brass Foot Valves, with strainer.

For hard service, centrifugal pumps and high pressures, No. 373 Swing Check Valves with Strainers and Leather Faced Discs can be supplied and are recommended.

For service on hot water, our No. 394½ Foot Valves with Brass Disc should be specified.

STANDARD CAST IRON FLANGED FITTINGS

No. 525*
Flanged Elbows

No. 527
45° Flanged Elbows

For steam working pressures up to 125 pounds.

Size Inches	No. 525 Elbow Faced Each	No. 525 Elbow Faced and Drilled Each	No. 527 45° Elbow Faced Each	No. 527 45° Elbow Faced and Drilled Each
1¼	3.00	3.60	3.30	3.90
1½	3.00	3.60	3.30	3.90
2	3.00	3.60	3.30	3.90
2½	3.15	3.75	3 50	4.10
3	3.45	4.15	3.80	4.50
3½	4.05	4.90	4.50	5.35
4	4.50	5.50	5.00	6.00
4½	5.50	6.50	6.00	7.00
5	6.25	7.25	6.90	7.90
6	7.60	8.90	8.35	9.65
7	10.50	12.00	11.00	12.50
8	12.00	13.60	12.60	14.20
9	17.00	19.25	17.75	20.00
10	19.00	21.70	20.00	22.70
12	28.00	31.00	29.50	32.50

*Illustration shows reducing flanges, standard flange priced.

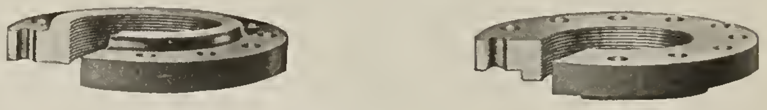
STANDARD CAST IRON FLANGED FITTINGS

No. 529 Flanged Tees

For steam working pressures up to 125 pounds.

Size Inches	No. 529 Tees Faced Each	No. 529 Tees Faced and Drilled Each
1¼	$ 4.35	$ 5.25
1½	4.35	5.25
2	4.35	5.25
2½	4.55	5.45
3	5.00	6.10
3½	5.85	7.10
4	6.50	8.00
4½	8.00	9.50
5	9.10	10.60
6	11.00	12.95
7	15.25	17.50
8	17.40	19.80
9	24.65	28.00
10	27.50	31.50
12	40.50	45.00

STANDARD COMPANION FLANGES



Back View, Showing Hub

No. 553—Cast iron for working pressures up to 125 pounds.

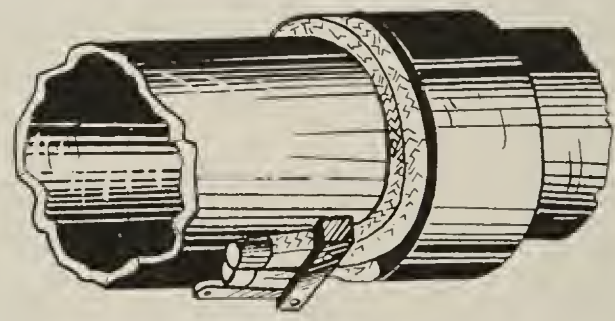
Size Inches	Faced Each	Faced and Drilled Each	Size Inches	Faced Each	Faced and Drilled Each
1x4	.55	.80	6x11	2.00	2.50
1¼x4½	.60	.85	7x12½	2.65	3.25
1½x5	.65	.90	8x13½	310	3.80
2x6	.75	1.00	9x15	3.85	4.65
2½x7	.85	1.10	10x16	4.50	5.50
3x7½	.95	1.25	12x19	6.50	7.65
3½x8½	1.20	1.55	14x21	9.00	10.35
4x9	1.35	1.80	15x21	11.50	13.20
4½x9¼	1.45	1.90	15x22¼	11.50	13.20
5x10	1.60	2.05			

CAST IRON STANDARD FLANGE UNIONS

For steam working pressures up to 125 pounds. Faced; gasket extra.

Size, Inches	½	¾	1	1¼	1½	2	2½	3
Diam. Flanges, in.	2¾	3⅜	3⅝	4⅛	4½	5⅛	5⅞	6⅝
Number of Bolts..	3	3	3	4	4	4	4	4
Price, each	.40	.46	.52	.64	.78	1.00	1.25	1.50
Price, Galv., each.	.80	.92	1.04	1.28	1.56	2.00	2.50	3.00

JOHNS-MANVILLE ASBESTOS LEAD JOINT RUNNER



For pouring lead joints in cast-iron gas and water pipe, the Johns-Manville Asbestos Lead Joint Runner is the most practical device on the market.

It is made of specially prepared solid Asbestos rope, of square cross section, having a ferrule on each end and provided with a clamping device for fastening in place on the pipe.

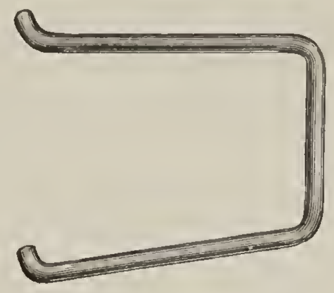
It can be easily and quickly placed in position for use and the clamping device readily locks it securely in place.

No. 1 — 2 feet long to fit 2, 3, and 4-inch pipe ...	$2.15
No. 2— 2 feet 6 inches long to fit 4, 5, and 6-inch pipe ...	2.35
No. 3— 3 feet 6 inches long to fit 6, 8. and 10-inch pipe ...	4.15
No. 4— 4 feet 8 inches long to fit 10, 12, and 14-inch pipe ...	5.40
No. 5— 6 feet 9 inches long to fit 16, 18, and 20-inch pipe ...	11.00
No. 6— 7 feet 10 inches long to fit 24-inch pipe	12.25
No. 7— 9 feet 4 inches long to fit 30-inch pipe	13.95
No. 8—10 feet 11 inches long to fit 36-inch pipe	15.75
No. 9—12 feet 7 inches long to fit 48-inch pipe	17.65
No. 10—13 feet 7 inches long to fit 48-inch pipe	18.80

Subject to Discount

NOTE:—When shipped from Manville, N. J. factory: Nos. 1 to 4 equipped with aluminum spring clamp; Nos. 5 to 10 equipped with aluminum screw clamps. When shipped from Waukegan, Ill. factory; Nos 1 to 10 equipped with iron toggle clamps.

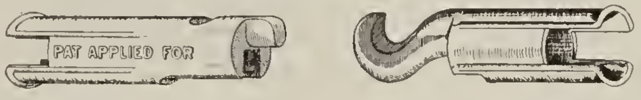
LADDER IRONS



For Sewer Manholes

Kansas City, Mo., specifications made of new one inch stock, hot galvanized, size ten inches across face, fourteen inches long in lots of 50 or more. F. O. B. Kansas City, Mo., each $1.25

SEWER RODS



FELTON'S IMPROVED COUPLINGS

For Conduit and Sewer Rods

These Couplings represent the latest and most improved device for connecting sewer and conduit rods. No other coupling possesses so many strong features of merit, which, briefly mentioned, are:

They positively cannot separate in the pipe or conduit.
They can be coupled and uncoupled instantly.
They can be turned in either direction without unlocking.
They are the most easily and quickly adjusted.
They are the least liable to get out of order.
They are the most practical couplings.

We usually furnish these Couplings attached to rods in three or four-foot lengths. The regular rod is of selected second growth hickory, although for conduit work, rods of iron pipe, steel tubing or brass tubing are often required. We make them to order in any desired length, or furnish the Couplings only, drilled ready for attaching to rods. In ordering specify kind and diameter of Coupling, whether with or without rods, and length of rod.

Price List Per 100 Sets

	Malleable	Brass
Couplings 1-inch diameter with Hickory Rods 3 feet long..................	$65.00	$ 80.00
Couplings 1-inch diameter with Hickory Rods 4 feet long..................	65.00	80.00
Couplings 1¼-inch diameter with Hickory Rods 3 feet long..............	80.00	100.00
Couplings 1¼-inch diameter with Hickory Rods 4 feet long..............	80.00	100.00
Couplings 1-inch diameter Drilled (without rods)	40.00	55.00
Couplings 1¼-inch diameter Drilled (without rods)	55.00	80.00

Couplings attached to Iron Pipe Rods or Steel Tubing Rods quoted on request.

Brass Jacket Drive Well Points

Complete Point

Point Before Gauze and Jacket Are Put On

Made of standard wrought iron pipe. Punched with elliptical holes of uniform size, equal distances apart. Has largest number of holes possible, retaining the strength required for driving. Driving plug is malleable casting, swaged into pipe and riveted Covered with brass wire cloth protected by heavy perforated jacket.

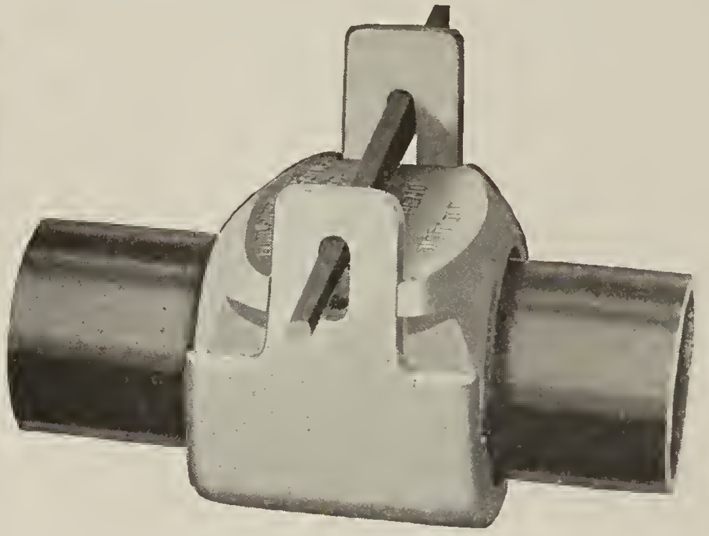
	Size			Price, per Dozen					
	Pipe	Lgth., In.		Gauze No.					
No.	In.	Point	Jacket	60	70	80	90	100	120
74	1	24	18	$33.0	$40.0	$46.0	$52.0	$62.0	$74.0
76	1	30	24	42.0	49.0	56.0	64.0	78.0	94.0
78	1	36	30	51.0	59.0	66.0	76.0	94.0	114.0
80	1	42	36	60.0	68.0	76.0	88.0	120.0	134.0
82	1	48	42	69.0	78.0	86.0	100.0	136.0	154.0
84	1	54	48	78.0	87.0	96.0	112.0	152.0	174.0
86	1¼	20	14	30.0	36.0	42.0	50.0	64.0	80.0
90	1¼	24	18	36.0	44.0	52.0	60.0	80.0	105.0
94	1¼	30	24	46.0	55.0	64.0	75.0	100.0	130.0
98	1¼	36	30	56.0	66.0	76.0	90.0	120.0	155.0
100	1¼	42	36	66.0	77.0	88.0	105.0	140.0	180.0
102	1¼	48	42	76.0	88.0	100.0	120.0	160.0	205.0
106	1¼	54	48	86.0	99.0	112.0	135.0	180.0	230.0
110	1¼	60	54	96.0	110.0	124.0	150.0	200.0	255.0
112	1¼	66	60	106.0	121.0	136.0	165.0	220.0	280.0
114	1¼	72	66	116.0	132.0	148.0	180.0	240.0	305.0
136	1½	24	18	48.0	57.0	65.0	78.0	94.0	112.0
140	1½	30	24	60.0	70.0	80.0	96.0	118.0	139.0
144	1½	36	30	72.0	84.0	95.0	114.0	142.0	166.0
146	1½	42	36	84.0	97.0	110.0	132.0	166.0	193.0
148	1½	48	42	96.0	111.0	125.0	150.0	188.0	220.0
150	1½	54	48	108.0	124.0	140.0	168.0	204.0	247.0
152	1½	60	54	120.0	138.0	155.0	186.0	228.0	274.0
154	1½	66	60	132.0	151.0	170.0	204.0	252.0	301.0
156	1½	72	66	144.0	165.0	185.0	222.0	276.0	328.0
160	2	24	18	75.0	85.0	94.0	110.0	130.0	150.0
164	2	30	24	90.0	101.0	112.0	132.0	160.0	185.0
168	2	36	30	105.0	118.0	130.0	154.0	190.0	220.0
170	2	42	36	120.0	134.0	148.0	176.0	220.0	255.0
172	2	48	42	135.0	151.0	166.0	198.0	250.0	290.0
174	2	54	48	150.0	167.0	184.0	220.0	280.0	325.0
176	2	60	54	165.0	184.0	202.0	242.0	310.0	360.0
178	2	66	60	180.0	200.0	220.0	264.0	340.0	395.0
180	2	72	66	195.0	217.0	238.0	286.0	370.0	430.0
180½	2	78	72	210.0	234.0	256.0	308.0	400.0	465.0
182	2	84	78	225.0	251.0	274.0	330.0	430.0	500.0
182½	2	90	84	240.0	268.0	292.0	352.0	460.0	535.0
183½	2	96	90	255.0	285.0	310.0	374.0	490.0	570.0
183	2½	30	24	155.0	175.0	195.0	220.0	250.0	290.0
184	2½	36	30	180.0	205.0	230.0	260.0	300.0	350.0
188	2½	48	42	230.0	265.0	300.0	340.0	400.0	470.0
192	2½	60	54	280.0	325.0	370.0	420.0	500.0	590.0
196	2½	72	66	330.0	385.0	440.0	500.0	600.0	710.0
197	2½	84	78	380.0	445.0	510.0	580.0	700.0	830.0
199	2½	96	90	430.0	505.0	580.0	660.0	800.0	950.0
200	3	36	30	240.0	275.0	310.0	340.0	410.0	490.0
204	3	48	42	300.0	345.0	390.0	430.0	520.0	630.0
208	3	60	54	360.0	415.0	470.0	520.0	630.0	770.0
212	3	72	66	420.0	485.0	550.0	610.0	740.0	910.0
214	3	84	78	480.0	555.0	630.0	700.0	850.0	1050.0
215	3	96	90	540.0	625.0	710.0	790.0	960.0	1190.0
202	3½	36	30	300.0	345.0	390.0	430.0	520.0	610.0
206	3½	48	42	360.0	415.0	470.0	520.0	630.0	750.0
210	3½	60	54	420.0	485.0	550.0	610.0	740.0	890.0
213	3½	72	60	480.0	555.0	630.0	700.0	850.0	1030.0
218	3¼	84	72	555.0	640.0	725.0	805.0	960.0	1170.0
219	3½	96	84	630.0	735.0	820.0	900.0	1070.0	1310.0
216	4	48	36	480.0	520.0	560.0	600.0	700.0	810.0
220	4	72	60	630.0	695.0	760.0	840.0	1000.0	1270.0
224	4	96	84	780.0	870.0	960.0	1080.0	1300.0	1610.0
228	4	120	108	930.0	1045.0	1160.0	1320.0	1600.0	2010.0

Please order by number, stating mesh of gauze.

WHY BOTHER CUTTING AND RETHREADING OLD PIPE?

Use Fons Flexible Couplings—speediest and most economical. One man with a hammer does the work.

8″ Pipe suspended in air on a 40° angle operating in gravel pit.



The One Key Coupling made especially for contractors using temporary pipe line for water or air, on suction or discharge, new or old pipe, threaded or not, regardless of pipe condition.

Flexible up to 40°, a tight joint under any workable pressure that an ordinary pipe will stand.

There are only three parts to this Coupling, top, bottom half, and a key. A moulded live rubber gasket is fastened to each half. This coupling when not in use, is carried assembled as one unit, or clamped on one end of the pipe.

To repair leak, clamp it over the pipe where the leak is, you can do it while the pressure is on.

ABSOLUTE NECESSITY

In Dredging—Pits—Quarries—Mines

In every coupling you have a sleeve, elbow, and ball union at all times.

They afford the speediest, simplest method of connecting pipe.

They last a life-time. Made of Electric Steel.

They are flexible up to 40 degrees, allowing free movement of boat.

They eliminate buckling, allowing full capacity of pipe at all times and angles.

They allow an immediate release of plugged lines.

Pipe can be easily turned.

Old pipes can be used regardless of condition.

Any section of pipe can be removed without affecting remainder of line.

THEY COST LESS THAN RUBBER SLEEVES

The diameter of riveted and spiral pipes varies. When ordering give the outside diameter.

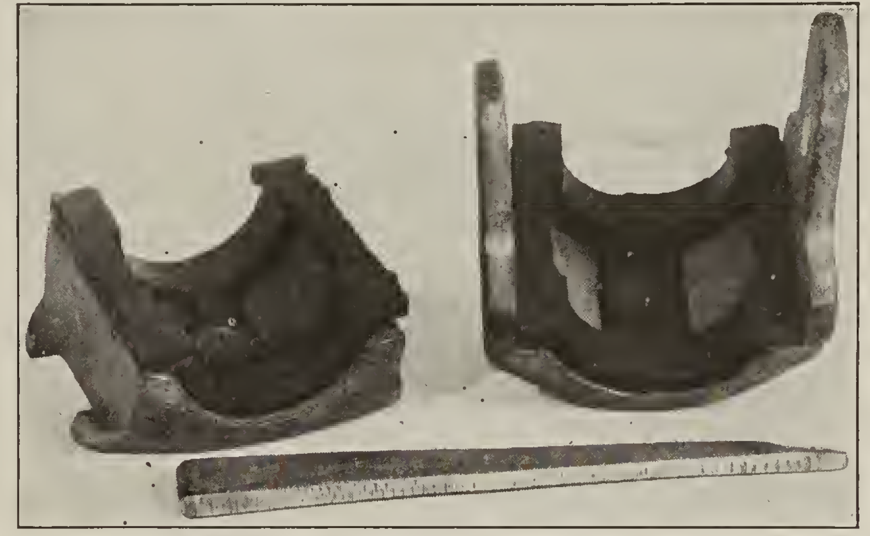
Manufactured by

FONS FLEXIBLE PIPE COUPLING COMPANY

ROYAL OAK, MICHIGAN

USE YOUR OLD PIPE

Fons Couplings Need no Threads, no Bolts and Nuts or Wrenches



Coupling Disassembled Showing Gaskets Riveted In

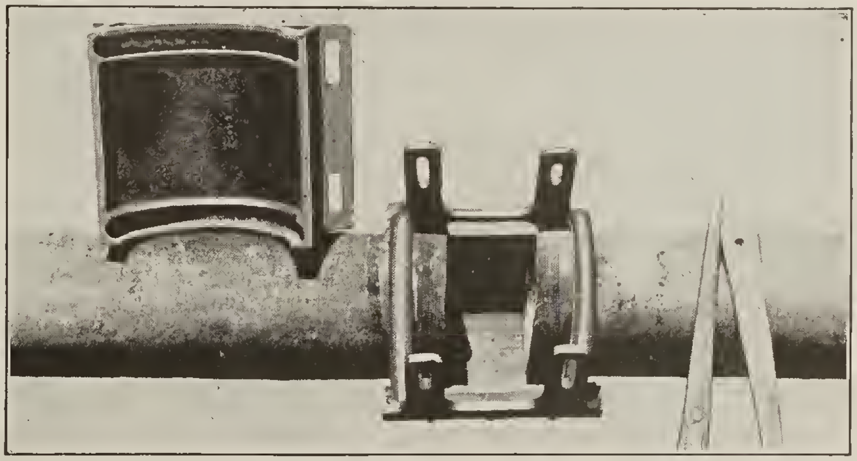
The one key couplings, sizes 1¼ to 3 inches are made of malleable iron. A hard rubber gasket is riveted to casting. Can be clamped anywhere on pipe to repair leak or make a flexible joint.

Sizes in Inches	Price Coupling Complete	Top Half	Lower Half	Gaskets Each Half	Side Rubber	Key Each	Weight Coupling Complete
1¼	$1.25	$.40	$.65	$.10	.....	$.10	3¼
1½	1.25	.40	.65	.10	.....	.10	3¼
2	1.50	.50	.90	.12	.....	.10	4¾
2½	2.50	.80	1.25	.20	.....	.20	8¾
3	3.50	1.15	1.75	.35	.....	.25	11¾
4	8.00	2.75	3.50	.60	.....	.35	27
STEEL							
4	$11.00	$4.50	$5.00	$.60	.....	$.35	27
6	24.00	9.50	10.00	1.00	.90	.50	54
8	35.00	13.00	14.00	2.00	1.50	1.00	105
10	52.50	21.00	22.50	2.25	1.75	1.50	165
12	75.00	28.00	32.00	4.50	2.00	2.00	240
16	125.00	51.00	57.00	6.00	2.50	2.75	365

1¼″ or 1½″ Special Leak Repair Cover $.50. 2″ $ 60

The double key couplings, sizes 4″ to 16″ are made of electric steel. The gaskets consist of two solid rubber strips fastened to the lower half and two loose rubber rings. The 4″ gaskets come in two halves and are fastened to castings.

Write for Discount on Quantity Lots.



Top Half Removed—Showing Pipe In Position

The outside diameter on spiral and riveted pipe varies according to the gauge of metal. When ordering for such pipe, the outside diameter should be given. 6″ coupling is used for 5″ pipe, the difference is made up in the rubber ring. It can be used to couple 5 and 6″ pipe together. 4″ couplings are made with two keys both in steel and malleable iron.

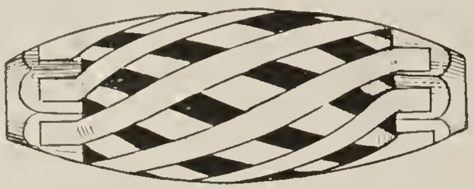
Manufactured by

FONS FLEXIBLE PIPE COUPLING COMPANY

ROYAL OAK, MICHIGAN

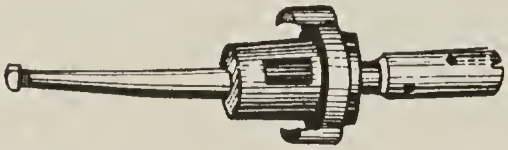
Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

PERFECTION FLUE CLEANER



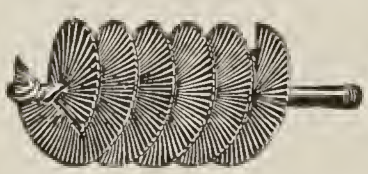
Size, inches	1¾	2	2½
Each	$2.30	$2.30	$3.50
Size, inches	3	3½	4
Each	$3.50	$4.00	$6.00

ROLLER FLUE EXPANDER



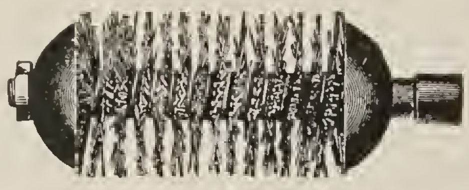
Size, inches	1¾	2	2½
Price, each	$7.60	$7.60	$9.60
Size, inches	3	3½	4
Price, each	$12.80	$16.00	$20.00

WIRE FLUE BRUSHES

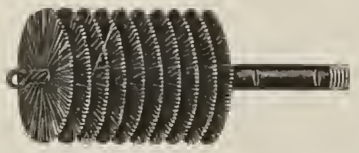


For Cleaning Boiler Tubes

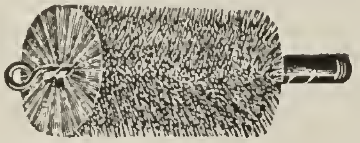
No. 1950—Flat steel wire; for 1 to 6 inch flues; list price, each $0.30



No. 1955—Flat steel wire; for 2 to 6 inch flues; list, per inch $0.90



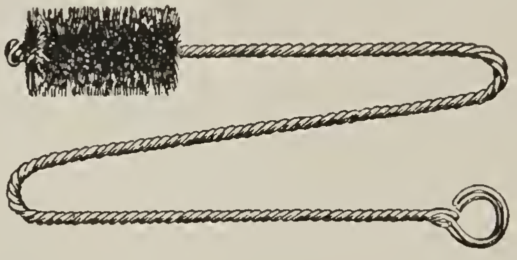
No. 1952—Round steel wire; single spiral; for 1 to 6 inch flue; list, per inch....................$0.30



No. 1953—Round steel wire; double spiral; for 1 to 6 inch flues; list, per inch $0.40

All flue brushes are made to fit standard sizes of flues, which are measured from the outside, making actual diameter of brush about ¼ inch less. For example, a brush for 3 inch standard flue is only 2¾ inches in diameter. When exact size is wanted, specify on order. Brushes under 2 inch, take 2-inch price.

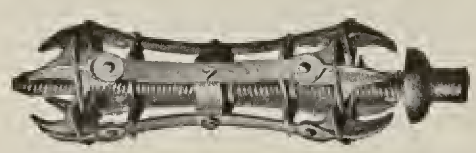
ROUND STEEL WIRE FLUE BRUSHES



With 3-foot flexible wire handles; single spiral.

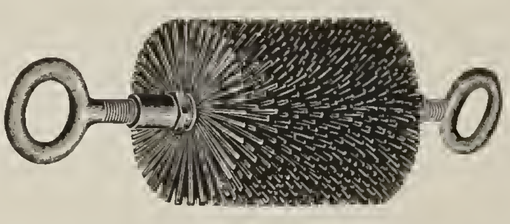
No. 1930—Diameter, 3 inches; list per dozen......$10.80
No. 1931—Diameter, 4 inches; list per dozen...... 13.20
No. 1932—Diameter, 4½ inches; list per dozen.... 14.40
No. 1933—Diameter, 5 inches; list per dozen...... 15.60

ENGINEERS' FAVORITE FLUE SCRAPERS



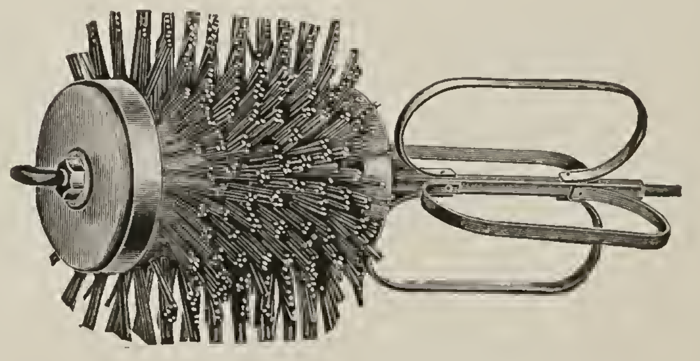
No. FS—For 1½ to 4½ inch flues; list, per inch....$1.00

SEWER PIPE CLEANING BRUSHES



Flat steel wire; brush part, 5 inches long; length over all, 12½ inches.

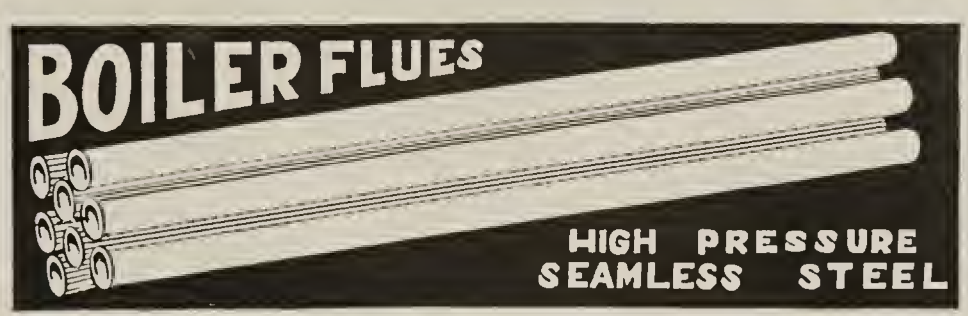
No. 960—Diameter, 4 inches; list price, each......$3.50
No. 961—Diameter, 5 inches; list price, each...... 4.50
No. 962—Diameter, 6 inches; list price, each...... 9.00



Brush part, 7 inches long.

No. 965—Diameter, 8 inches; 4-inch hub, list, each $12.50
No. 966—Diameter, 10 inches; 5-inch hub, list, each 16.00
No. 967—Diameter, 12 inches; 5-inch hub, list, each 20.00
No. 968—Diameter, 15 inches; 6-inch hub, list, each 24.00

SEAMLESS STEEL BOILER TUBES



2½ inch and under are cold-drawn
3 inch and over are hot-rolled.

Seamless cold drawn steel boiler tubes are more ductile than ordinary tubes, and permit manipulation, distortion, and punishment to a much greater degree.

Threshermen and boiler makers appreciate this, because a set of seamless tubes can be put in a boiler in much less time than any other tube. This tube has a very smooth surface which resists corrosion and pitting.

When ordering tubes, give outside diameter, and in measuring the length allow ⅛ inch at each end for turning over and beading.

Take several measurements, as occasionally flue sheets are not square.

	Prices per foot		Price per foot
1, 1¼, 1½, 1¾ and 2-inch	$ .21	3½ inch	$ .36
2½ inch	.29	4 inch	.39
3 inch	.32		

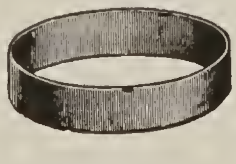
Following is a list of tubes used in the popular traction engines. They are usually carried in stock for prompt shipment. Other tubes will be cut to any specified length, but customer must pay for wastage and a 5c charge for cutting each tube.

2-in. x 72-in.	$1.26	2-in. x 100½-in.	1.75
2-in. x 77-in.	1.37	2-in. x 105 -in.	1.84
2-in. x 78-in.	1.37	2-in. x 108 -in.	1.89
2-in. x 80-in.	1.40	2½-in. x 72-in.	$1.73
2-in. x 84-in.	1.47	2⅛-in. x 92-in.	2.21
2-in. x 84½-in.	1.47	2½-in. x 94-in.	2.26
2-in. x 90½-in.	$1.58	2½-in. x 96-in.	2.31
2-in. x 96 -in.	1.68	2½-in. x 105-in.	2.52
2-in. x 96½-in.	1.68	2½-in. x 108-in.	2.57

SEAMLESS COPPER FERRULES

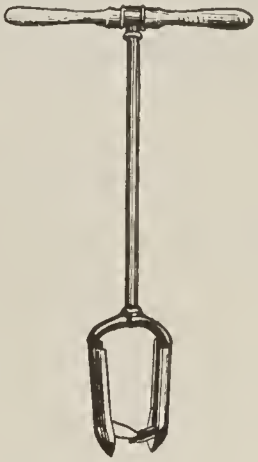
Reduce liability of leaky flues by using a high quality seamless ferrule.

2x⅝x1/32	$0.70
2x⅝x1/16	.10
2x¾x1/32	.08
2x¾x1/16	.11
3x¾x1/32	.14
2½x⅝x1/32	$0.10
2½x⅝x1/16	.12
2½x¾x1/32	.11
2½x¾x1/16	.13
3 x¾x1/16	.17
4 x¾x1/16	.27



IWAN AUGERS

For Post Holes or Wells



This auger has met with universal satisfaction under all conditions of soil. It is effective in operation and unexcelled for easy and quick work; no suction when removed from the hole.

With this auger an operator can do three times as much work as with any other auger or digger now in use. The condition of ground makes no difference. Blades of high carbon steel. Malleable castings.

Total length of 12-in. size, 6 ft. All other sizes, 4 ft. The 12-in. auger is fitted with 1-in. pipe, and all other sizes with ¾-in.

Size ins.	4	5	6	7
Wgt. each, lbs.	7	7¼	8½	9½
Per doz.	35.10	35.10	35.10	37.70

Size. ins.	8	9	10	12
Wgt. each, lbs.	10	10¼	11½	22
Per doz.	37.70	40.00	45.40	121.20

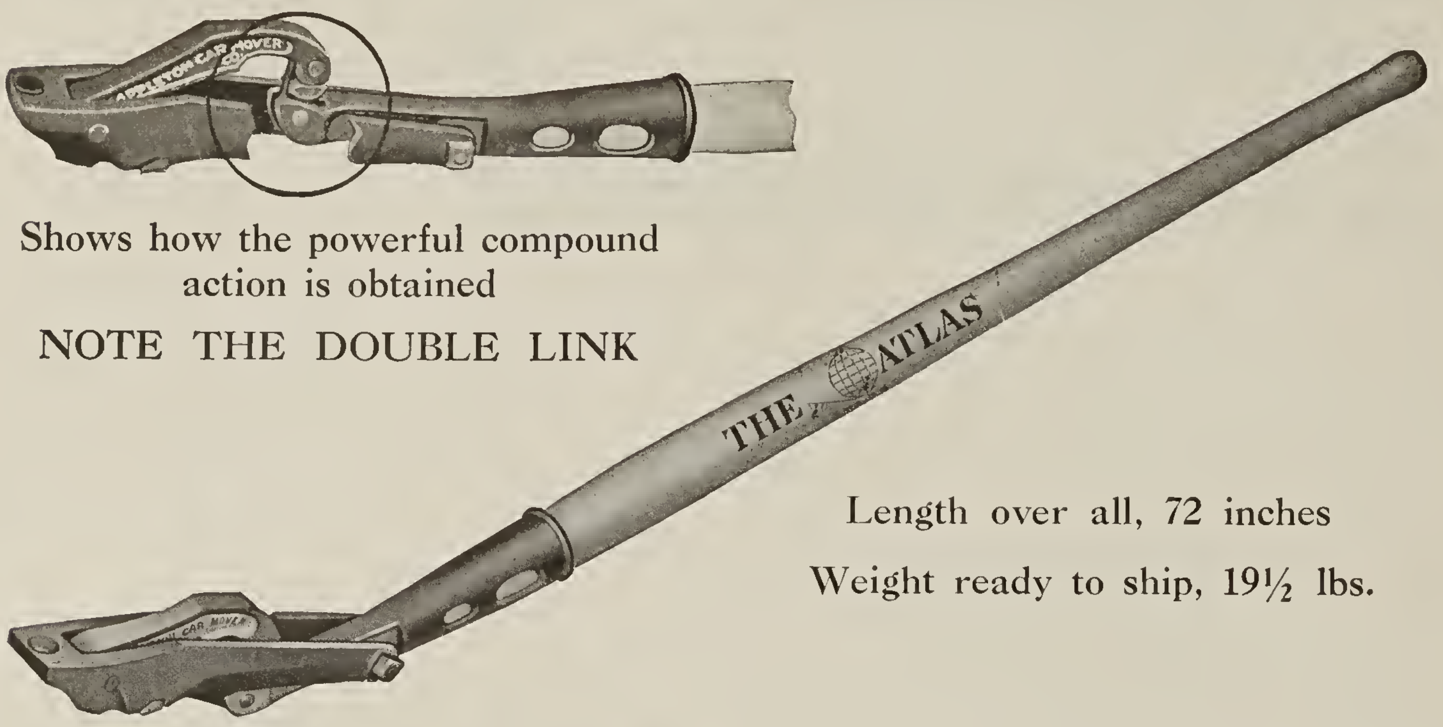
Extra Handles, per dozen	3.20

ROAD OILERS

Write for Catalog.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

THE FAMOUS ATLAS CAR MOVER

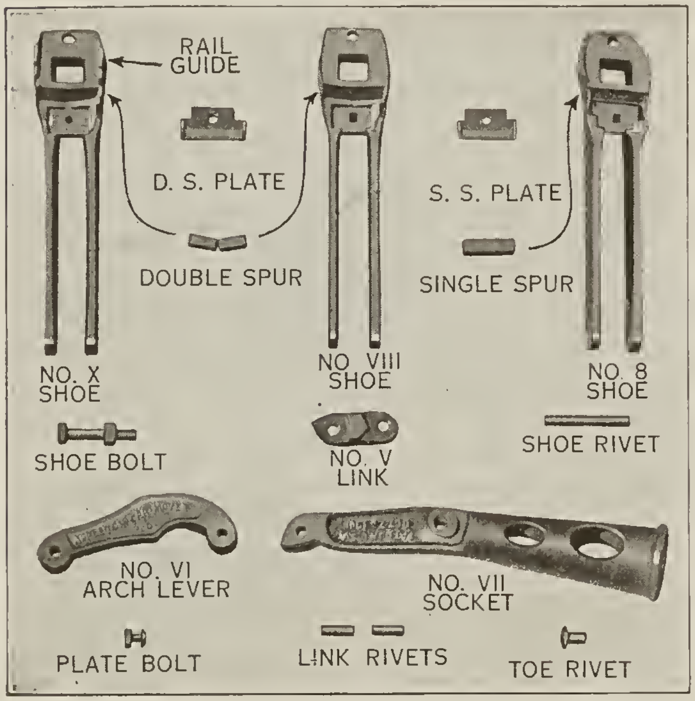


Shows how the powerful compound action is obtained

NOTE THE DOUBLE LINK

Length over all, 72 inches

Weight ready to ship, 19½ lbs.



Any car mover will move an empty car, but it requires power to move a loaded one, and when power is needed The Atlas is supreme. No car is too big, no weight too great to be moved by an Atlas.

The illustration above shows the action of The Atlas. No compound action can be obtained without such a doubling of leverage. Swinging parts on a simple lever do not give compound action or increase power.

The Atlas is the only mover made having an effective compound leverage action.

Whether it is an empty car or a loaded one The Atlas will move it further in a given number of strokes than any other mover.

The spurs are of special analysis steel made for this work—hardened and tempered by experts to stand up under the strain to which they are subjected. Set at an angle to grip the softest part of the rail, there is no danger or loss of power from slipping.

Built on the correct scientific principle of compound leverage—properly applied, it develops 40% to 60% more power than any other mover, it has a longer stroke and none of the energy is used in lifting the car but is expended in a thrust forward making it easier to operate and faster.

Only materials of highest grade are used in its manufacture. Every mover is fully guaranteed for one year. Replacement of any defective part free at factory.

Try an ATLAS and see the difference.

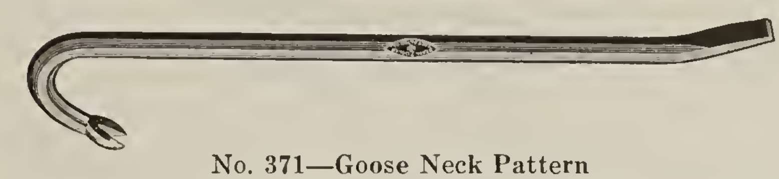
We invite TESTS and comparisons.

PRICE LIST FOR REPAIRS

No. V—Link, with 2 rivets	$ .60
No. VI—Arch lever, or knee, 2 rivets	.90
No. VII—Socket, with bolt and 1 rivet	2.00
No. VIII—Shoe, with bolt and 1 rivet	2.00
No. X—Shoe, with bolt and 1 rivet	2.00
Handle	2.00
Plate or clamp with bolt	.50
Spur, or heel, single, 19-32x2⅜	.50
Double or two-piece spur, per pair, ½"x1¼"	.50
Machine bolt	.10
Plate bolt	.10
Toe rivet	.05

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

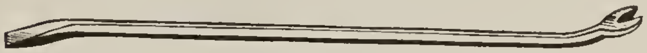
CARPENTER'S WRECKING BAR



No. 371—Goose Neck Pattern

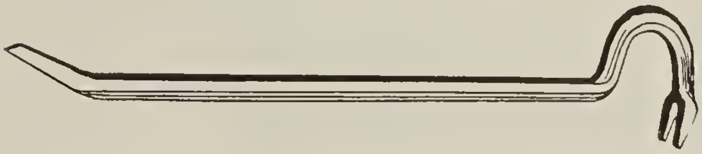
Standard Sizes	List Prices, doz.
½″ Octagon, 12″ long	$ 4.80
⅝″ Octagon, 18″ long	6.00
¾″ Octagon, 24″ long	7.00
¾″ Octagon, 30″ long	10.00

No. 370—Straight Pattern



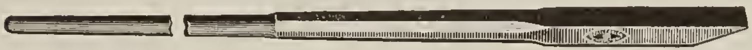
Prices and sizes same as number 371 above

No. 374—Improved Pattern



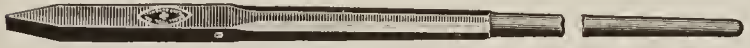
Standard Sizes	List Price doz.
¾″ Octagon, 24″ long	$ 6.50
¾″ Octagon, 30″ long	8.50

CROW BARS



No. 260—Crow Bar (Pinch Point)

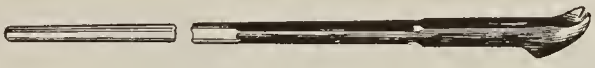
Made any weight, standard weight 26 pounds.
List Price per 100 lbs. $14.00



No. 261—Crow Bar (Wedge Point)

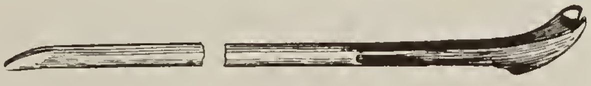
Made any weight, standard weight 26 pounds.
List Price per 100 lbs. $16.50

CLAW BAR WITH HEEL



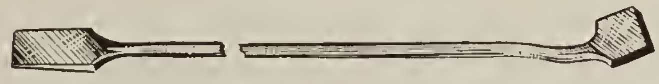
No. 251—Weight about 30 pounds.
Per 100 lbs. $17.00

No. 252—Claw Bar (R.M.A.)



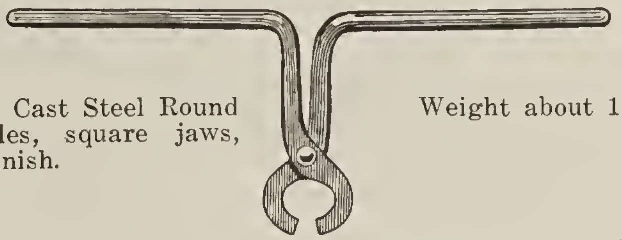
Adopted by R.M.A. committee on bars ....
Per 100 lbs. $16.00

TAMPING BAR



Weight about 15 lbs. ....
List Price per 100 lbs. $18.00

RAIL TONGS—No. 340

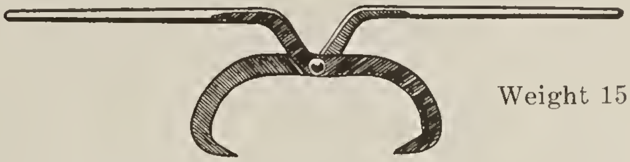


Solid Cast Steel Round handles, square jaws, oil finish.

Weight about 18 lbs.

Price per 100 lbs. $25.00

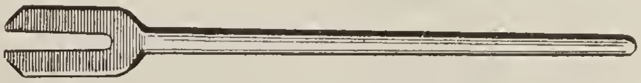
TIE TONGS—No. 341



Weight 15 lbs.

Price per 100 lbs. $20.00

RAIL FORK—No. 344



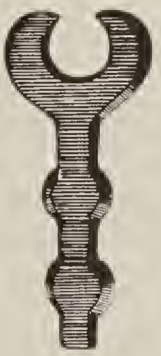
Average weight about 18 pounds.
Per 100 lbs. $19.00

No. 280—TRACK CHISEL

Heat treated and tempered steel. Wt. 5¼ pounds.

Per 100 lbs. $55.00

SPIKE PULLER—No. 333

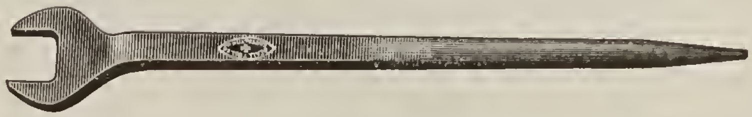


Either two or three knob. Heat treated and tempered.

2 knob, wt. 1½ lbs.
3 knob, wt. 2 lbs.

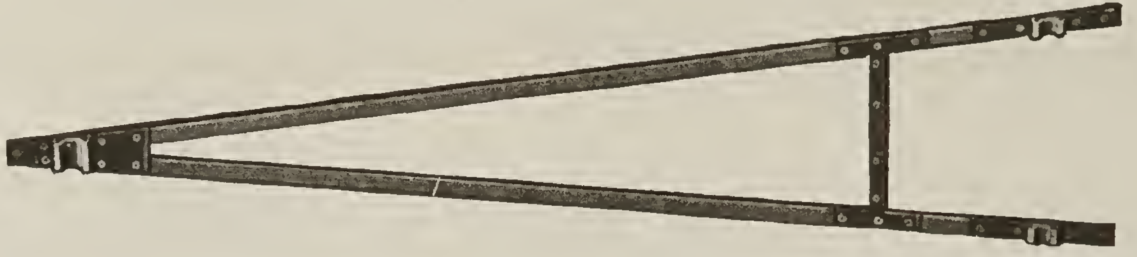
Per 100 lbs. $72.00

TRACK WRENCH—No. 300



Made with 1⅛″, $1\frac{5}{16}$″ and 1½″ openings.
Per 100 lbs. $16.00

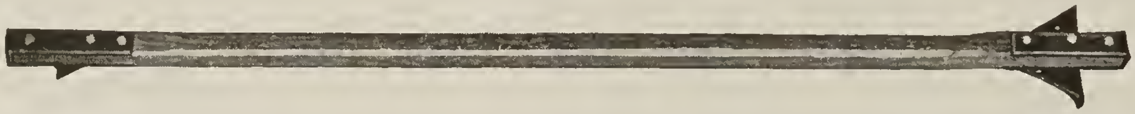
NO. 13—BIG FOUR TRACK GAUGE



Standard on N. Y. C. Lines. Gauges are made from White Oak, malleable parts are mortised into wood, and held in place by large screws. Wood parts tennoned and riveted. Also has guard rail gauge. (Painted green).

Per dozen F. O. B. Factory $60.00

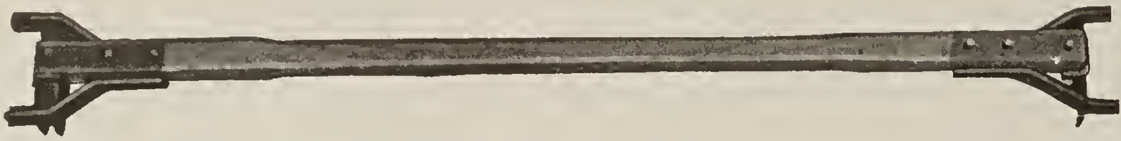
No. 14—ERIE TRACK GAUGE



Standard on Erie and Central of Georgia Railways. Center made from White Oak. Gauge Irons and Binding of $\frac{3}{16}$″ Steel, held in place by six ½″ rivets. (Center varnished, ends painted black).

Per Dozen F. O. B. Factory $36.00

No. 15—ATLANTIC COAST LINE GAUGE



Standard on A. C. L. Railway; also standard on several of America's largest Railroads. Center made from White Oak. All metal parts of best Malleable Iron, held secure by 6 bolts. Also has Guard Rail Gauge. (Center varnished, ends painted black).

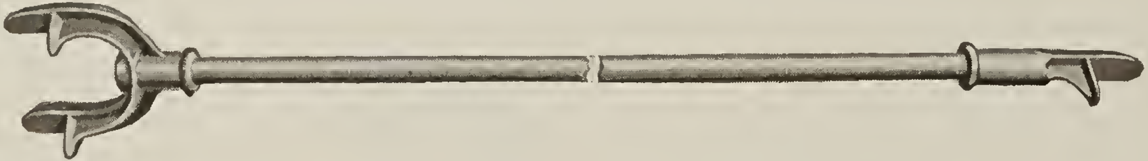
Per Dozen F. O. B. Factory $33.00

No. 16—B. & O. STANDARD TRACK GAUGE (Insulated)
No. 17—B. & O. STANDARD TRACK GAUGE (non-insulated)

Standard on B. & O. Railroad; also standard on several other of America's largest Railroads. Center made from gas pipe, castings of heavy Malleable Iron, machined and assembled perfectly. Tested and Gauged accurately. Also has Guard Rail Gauge. (Painted black).

Per Dozen (insulated) F. O. B. Factory $30.00
Per Dozen, (non-insulated) F. O. B. Factory 27.00

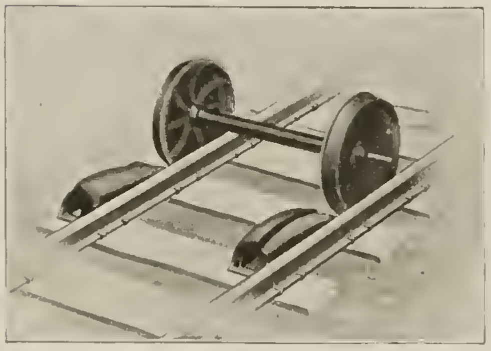
No. 18—HUNTINGTON TRACK GAUGE (insulated)
No. 19—HUNTINGTON TRACK GAUGE (non-insulated)



This Gauge is standard on several of America's largest Railroads. Centers made from gas pipe. Castings of heavy Malleable Iron, machined and assembled perfectly. Tested and Gauged accurately. (Painted black).

Per Dozen (insulated) F. O. B. Factory $30.00
Per Dozen (non-insulated) F. O. B. Factory) 27.00

CAR AND ENGINE REPLACER



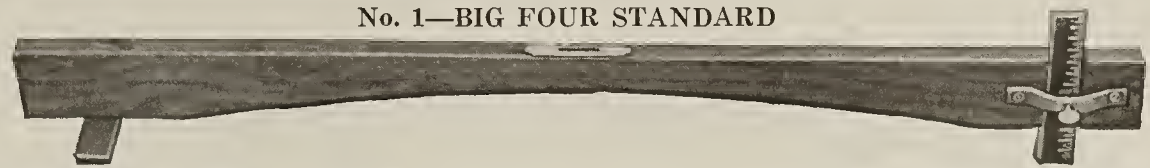
Cast Steel Car Replacers for Cars and Engines for All Size Rails

No. 1	for 100 lb. rails	$52.00
No. 2	for 85 lb. rails	50.00
No. 3	for 70 lb. rails	36.00
No. 3½	for 50 lb. rails	36.00
No. 4	for 30 lb. rails	28.00

Prices on this page F. O. B. our Illinois Factory.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

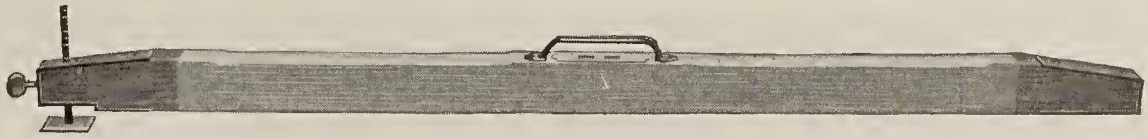
No. 1—BIG FOUR STANDARD



Standard on all N. Y. C. Lines. Level is made from seasoned White Pine, 1⅜" thick; bottom plate and Elevation Slide from White Oak. Equipped with Stanley's Adjustable Spirit Glass. (Painted Green).

Per Dozen $48.00

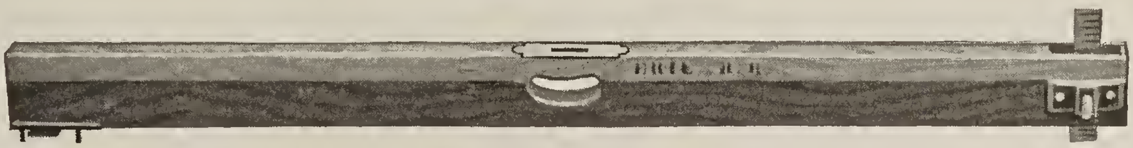
No. 2—ADJUSTABLE SPIRIT ELEVATION BOARD



Made from Seasoned White Pine, 1⅜" thick; bound with $\frac{3}{16}$" steel, Steel carrying handle and Elevation Slide. Equipped with Stanley's Adjustable Spirit Glass. (Center varnished, ends painted black).

Per Dozen $48.00

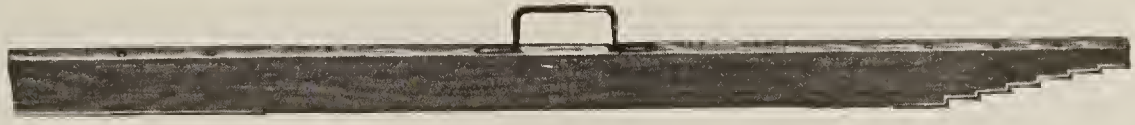
No. 3—ERIE STANDARD



Standard on Erie Railroad. Level is made from Seasoned White Pine, 1⅜" thick; painted black and white; Elevation Slide made from Oak or Ash; figures mounted on Copper Plate. Equipped with Stanley's Adjustable Spirit Glass.

Per Dozen $48.00

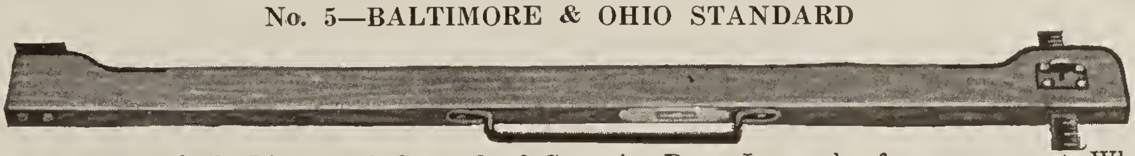
No. 4—ATLANTIC COAST LINE STANDARD



Standard on A. C. L. Railway. Level is made from Seasoned White Pine, 1¼" thick; bound with ⅛" steel, bolted to level. Steel carrying handle. Equipped with stationary glass accurately tested. Stanley's Adjustable Glass furnished on special orders. (Painted green or varnished).

Per Dozen $36.00

No. 5—BALTIMORE & OHIO STANDARD

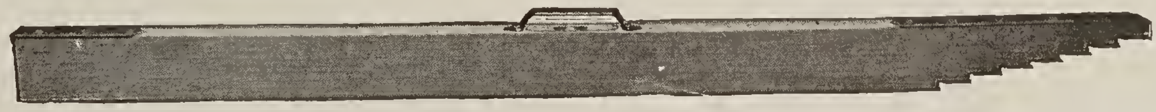


Standard on B. & O. Lines and Central of Georgia Ry. Is made from seasoned White Pine, 1⅜" thick; bound with ¼" steel; bottom plate bolted through level; steel elevation slide and carrying handle. Equipped with Stanley's Adjustable Spirit Glass. (Wood painted white, metal parts black).

Per Dozen $48.00

No. 6—STANDARD TRACK LEVEL

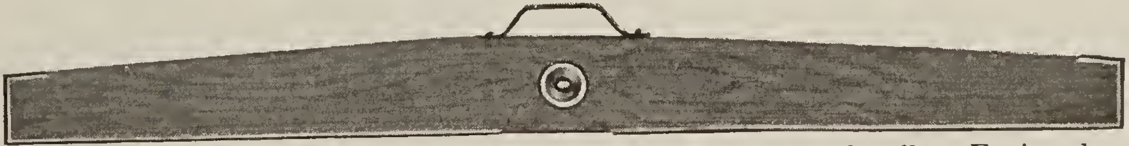
No. 7—ADJUSTABLE SPIRIT TRACK LEVEL



No 6 is equipped with stationary glass. No. 7 is equipped with Stanley's Adjustable Spirit Glass. Both are made from White Pine, 1⅛" thick. Steel Binding and Carrying Handle. Both are standard on several of America's largest Railroads. (Varnished).

No. 6—Standard Track Level, Per Dozen $30.00
No. 7—Adjustable Spirit Track Level. Per Dozen 36.00

No. 8—STRAIGHT END, SIDE GLASS, TRACK LEVEL

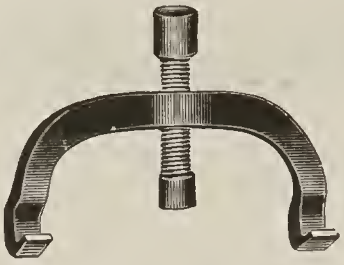


Made from White Pine, 1⅛" thick. Steel binding and carrying handle. Equipped with Stanley's Adjustable Spirit Glass. (Painted Green).

Per Dozen $33.00

All Prices F. O. B. Our Illinois Factory. Ready for immediate shipment.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.



"CHICAGO" SCREW RAIL BENDER

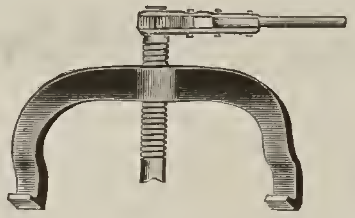
Without Cross-Bar

Widely used in mines because of compactness. May be used for many purposes.

Forged from best O. H. Steel

Steel screws, machine cut, square threads, three to the inch. Malleable cap to fit rails. Furnished with or without steel lever.

Size No.	Capacity Size of Rails	Size of Hole For Lever	Span of Hooks	Diameter of Screws	Weight, Each	List Price Ea. Without Lever
0	135	1¾"	28"	3 "	200	$60.00
1	100	1⅜"	28"	2¾"	170	50.00
2	85	1⅜"	28"	2⅝"	145	43.00
3	75	1¼"	24"	2½"	110	32.50
4	50	1⅛"	20"	2¼"	85	24.50
5	25	1 "	16"	2 "	65	20.50
6	16	1 "	14"	1¾"	40	18.00
7	10	⅞"	14"	1½"	30	17.00



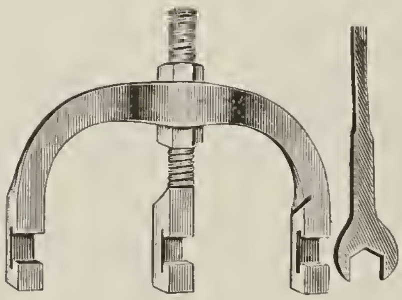
"SMITH" RATCHET RAIL BENDER

Forged from the best O. H. Steel. Steel screw, machine cut, square threads, three to the inch. Malleable Iron ratchet plates, forged steel milled ratchets.

Easily operated, adapted for mine purposes.

May be used to either bend or straighted rails, axles, rods, pipe or irons. Malleable cap to fit rails.

Size No. Size of Rails	Span of Hooks	Capacity	Diameter of Screws	Weight, Each	List Price Ea.
1	100	28"	2¾"	200	$50.00
2	85	28"	2⅝"	160	45.00
3	75	24"	2½"	120	33.00
4	50	20"	2¼"	90	25.00
5	25	16"	2 "	70	21.00
6	16	14"	1¾"	50	18.00
7	10	14"	1½"	40	18.00



"SMITH" DOUBLE ACTING RAIL BENDER

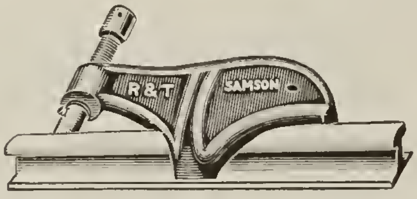
With Forged Wrench

Forged from best O. H. Steel.

May be used in small space.

Bends or straightens by operation of nut. Threads square, machine cut, three to the inch. Practical in mines, where Bender cannot be used on both sides of rail.

Size No.	Capacity Size of Rails	Span of Hooks	Diameter of Screws	Weight, Each	List Price Ea.
1	100	26"	2¾"	200	$50.00
2	85	24"	2½"	160	45.00
3	75	22"	2¼"	125	33.00
4	50	18"	2 "	90	25.00
5	25	16"	1¾"	70	21.00
6	16	14"	1¾"	50	18.00



R. & T. SAMSON RAIL BENDER

Samson of Name and Action

Light in weight but very powerful and compact; can be operated by one man. Frame is of open hearth steel, screw works in bronze nut, and is provided with anti-friction washers, hardened steel thrust. Now made in 5 sizes.

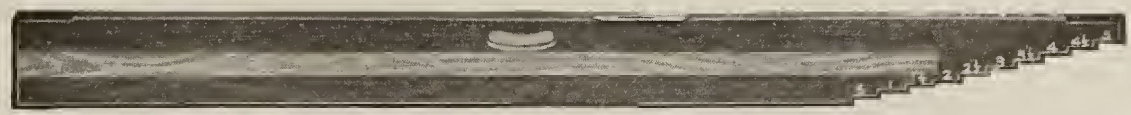
Size No.	Capacity Size of Rails	Weight, Each	List Price Ea.
0	150	190	$60.00
1	110	140	50.00
2	80	110	40.00
3	60	65	30.00
4	45	35	20.00

No. 9—STEP END SIDE GLASS TRACK LEVEL

Made from White Pine 1⅛″ thick. Steel binding and carrying handle. Equipped with Stanley's Adjustable Spirit Glass. (Painted Green).

Per Dozen F. O. B. Factory $33.00

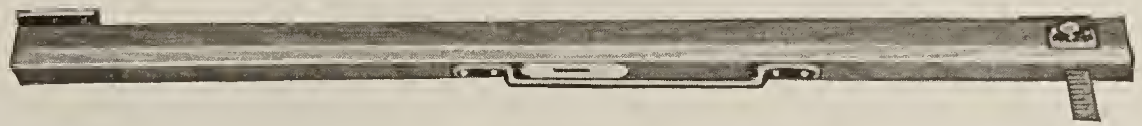
No. 10—CANADIAN NATIONAL STANDARD



Standard on Canadian National Railway. Made from Seasoned White Pine, 1⅜″ thick. 16-gauge Steel Binding, held with wood screws. Painted black with white stripe in center. Equipped with Stanley's Adjustable Spirit Glass.

Per Dozen F. O. B. Factory $48.00

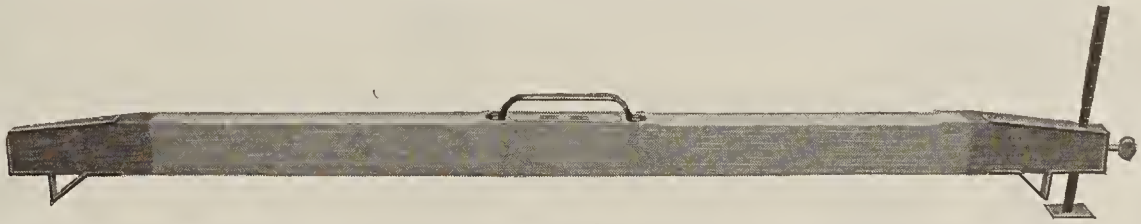
No. 11—COMBINED LEVEL AND SPOT BOARD



Made from seasoned White Pine 1⅜″ thick. 3/16″ steel binding, steel carrying handle, and elevation slide. Painted black and white. Equipped with Stanley's Adjustable Spirit Glass.

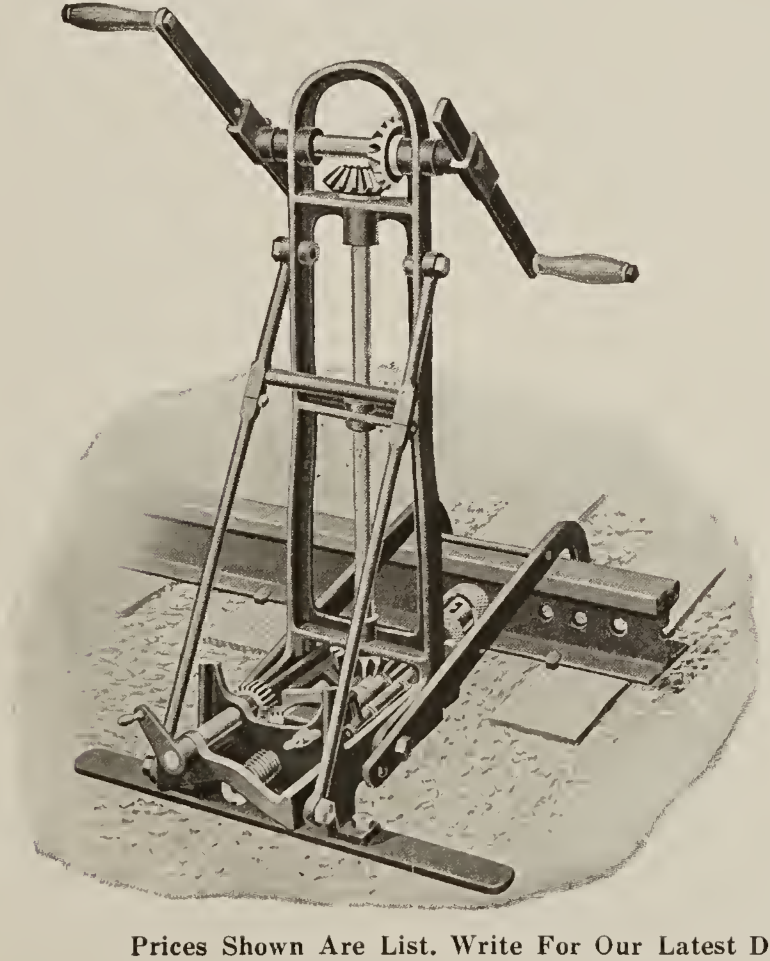
Per Dozen, F. O. B. Factory $42.00

No. 12—COMBINED LEVEL AND GAUGE



Made from seasoned White Pine, 1⅜″ thick. 3/16″ steel gauge irons and binding, steel carrying handle, and elevation slide. Painted black and white. Equipped with Stanley's Adjusting handle, and elevation slide. Center varnished; ends painted black. Equipped with Stanley's Adjustable Spirit glass.

Per Dozen, F. O. B. Factory $48.00



RICHTAL VERTICAL TRACK DRILLS

Richtal Heavy Duty Track Drill

(Illustrated Left) is made of Certified Malleable Iron Castings and has cut gears. All Bearings are Bronze Bushed to insure against wear. It is designed for heavy drilling from ¾″ up and will give long and satisfactory service. Weight each, 95 pounds.

Richtal Standard Track Drill

Is also made of Certified Malleable Iron Castings, but is of somewhat lighter construction with a capacity up to ¾″. Weight each, 65 pounds.

Both styles regularly equipped with Over-Clutch Hooks, but Under-Clutch may be had if desired.

Price each, Heavy Duty, equipped with Chuck for ⅝″ round shank twist drills,
Each, F. O. B. Factory $65.00

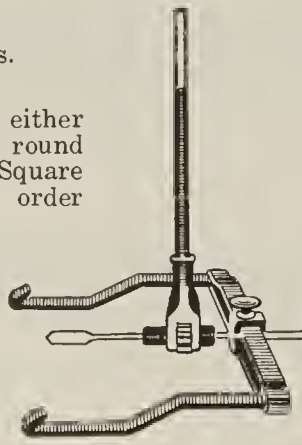
Price each, Heavy Duty, equipped with chuck to take flat beaded bits.
Each, F. O. B. Factory $75.00

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

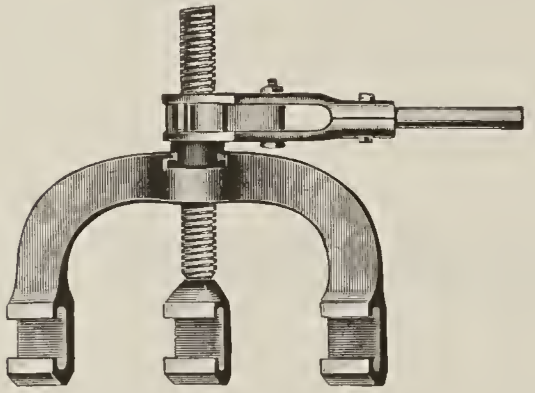
BELAND'S RAIL DRILL

Weight complete, 25 lbs.

Is equipped to carry either square shank bits or 5/8″ round shank twist drills. Square shank is furnished when order does not specify style.



Price complete, each	$8.00
Price frame, each,	4.00
Price Ratchet, each	4.00



DOUBLE ACTING RATCHET TYPE RAIL BENDER

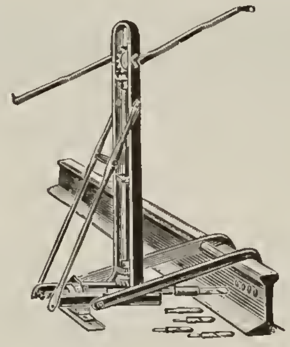
Forged from best O. H. Steel, steel screws, square threads, machine cut, three to the inch.

Specially adapted for Mine use, where Bender can only be used on one side of rail.

Malleable Iron Rachet Plates, Forged Steel Ratchet Nut, recess cut in boss of Bender to receive Ratchet Nut.

Size No.	Capacity Size of Rails	Span of Hooks	Diameter of Screws	Weight, Each	List Price
4	50	18″	2 ″	100	$35.00
5	25	16″	1¾″	80	30.00
6	16	14″	1¾″	60	25.00

PAULUS TRACK DRILL



New Style

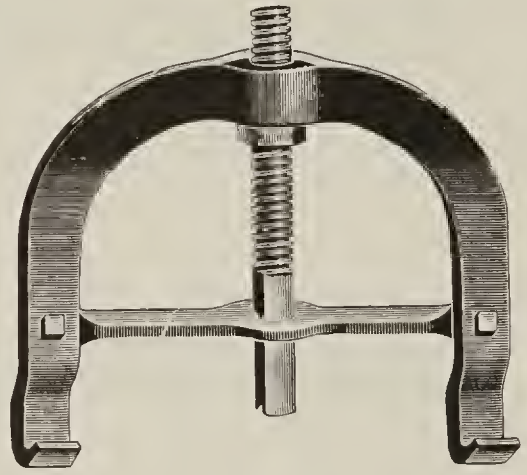
Automatic feed over clutch. Quick return of spindle.

Carefully constructed and standard in every respect.

All castings are of best Malleable Iron.

For use of twist drills, or rich flat bits. Weight 65 pounds each.

Price, each	$50.00
Price, with rich chuck, each	60.00



"STANDARD" "JIM CROW" RAIL BENDER

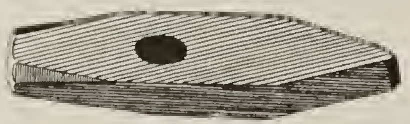
With bolted on cross bar and forged wrench furnished. Forged from O. H. Steel. Steel screws, square machine cut threads, three to the inch.

Special price on welded cross-bar upon request.

Size No.	Capacity Size of Rails	Span of Hooks	Screws Diameter of	Weight, Each Complete	List Price Each
0	135	26″	3 ″	210	$60.00
1	100	26″	2½″	180	50.00
2	85	24″	2½″	150	43.00
3	75	22″	2¼″	110	32.50
4	50	18″	2 ″	85	24.50
5	25	16″	1¾″	60	20.50
6	16	14″	1¾″	40	18.00

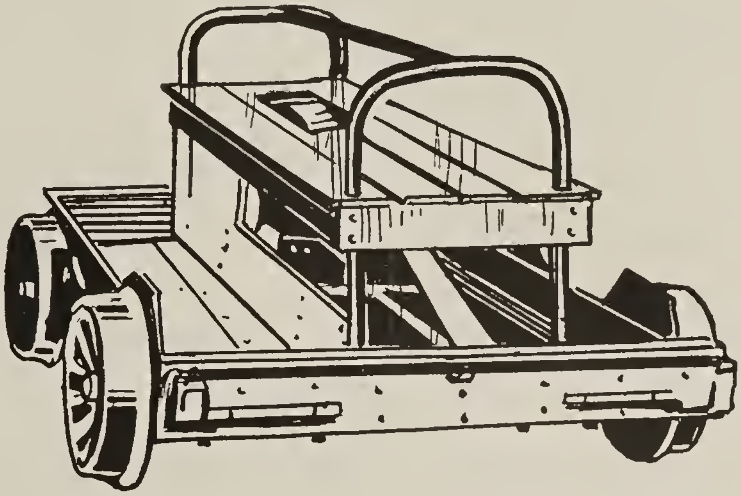
No. 311—SPIKE MAUL, STANDARD PATTERN

Standard weight, 6, 8 and 10 pounds.

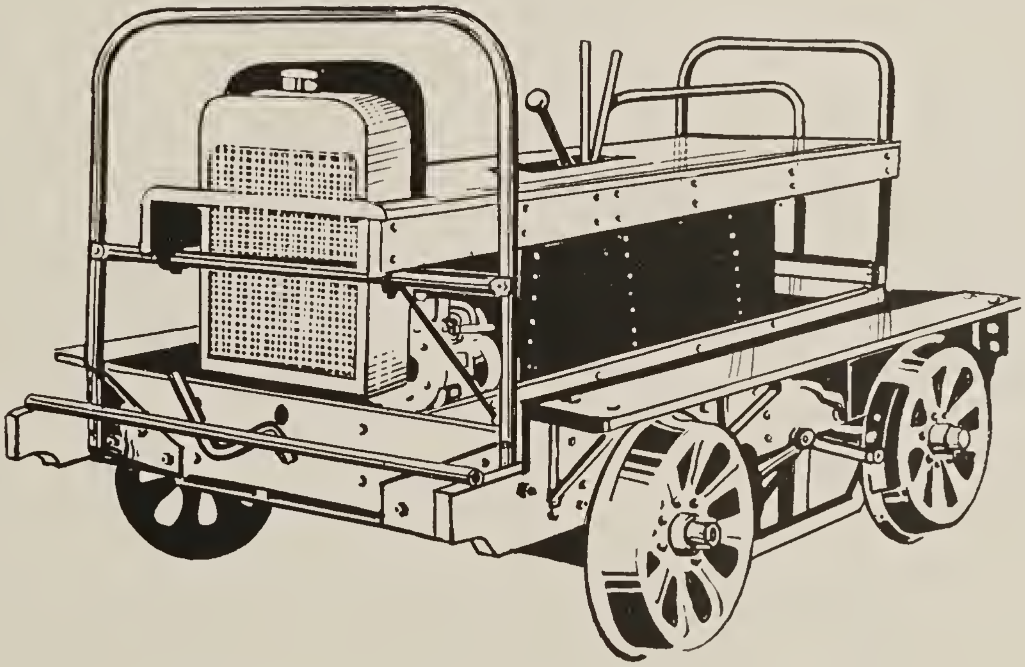


6 lb. maul, each	$1.30
8 lb. maul, each	1.50
10 lb. maul, each	1.80

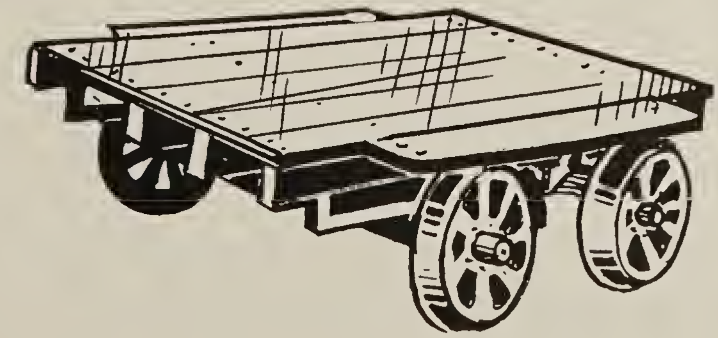
RAILWAY MOTOR CARS AND TRAILERS.



We can furnish Railway Motor Cars of any size to meet the requirements of the Railroad contractor. When in the market for this kind of equipment be sure to write us for special information and prices.



Whether you want a fast two man car for inspection purposes or a gang car for transporting your men to the job we are in a position to take care of your needs. We carry a complete line of cars of every description and will be glad to furnish you with every bit of information you want.

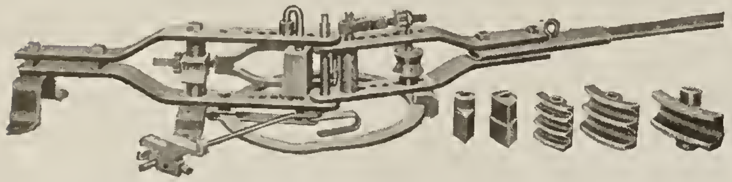


You will need trailers to carry light loads behind your gang cars. We can quote on the car that will meet your needs.

Write for catalog giving detailed specifications and information.

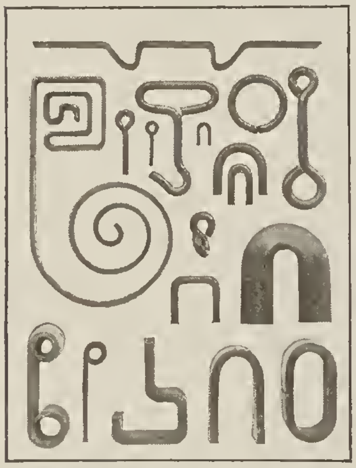
THE HOSSFELD UNIVERSAL IRON BENDER

Wrenchless Type

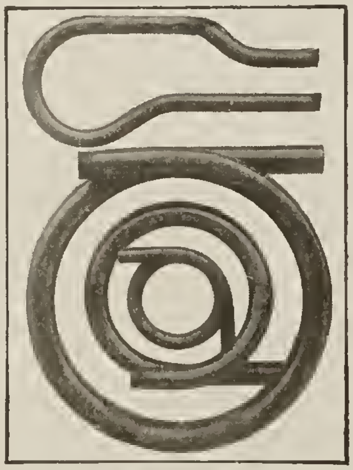


This Powerful, steel constructed, wrenchless, Universal bending machine will neatly, quickly and accurately, bend most any shape you ever have occasion to make—such as Eye Bolts, "U" shapes, "S" shapes, links, circles, angles, offsets, braces, cranks irregular shapes, etc. It will also bend standard Pipe and Conduit smoothly and perfectly, without flattening the pipe or splitting the seam. A spring bending attachment is also provided which will roll smooth accurate eyes on Automobile Springs and the like.

All of the features of this wonderful machine are brought out in a marvel of mechanical design. All clumsy useless weight is avoided; the adjustments for doing all the different kinds of work can be instantly made without the use of a wrench. The parts which take the strain are made of finely tempered steel, and the construction in general makes it practically unbreakable. The extreme simplicity of the mechanism, together with the wide range of work it will perform, makes it an object of admiration to all who use it.



Samples of Pipe Bending



Samples of Bar Bending

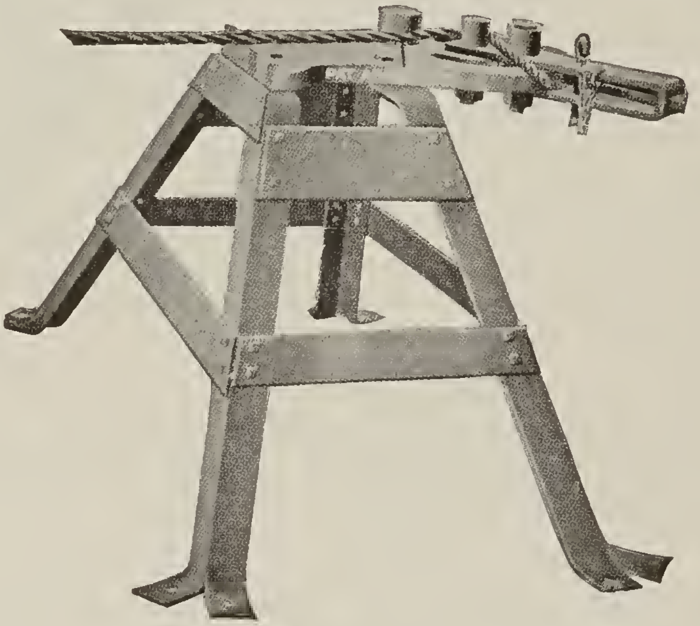
Bends all sizes of pipe and conduit up to 1¼″ inside diam. Makes a perfectly smooth even bend without flattening the pipe or splitting the seam. Bends to any degree or to a continuous coil, as desired. Also bends offsets and irregular shapes. Bends to an 8″ radius on the 1¼″ size, down to a 2″ radius on the ¼″ size. The machine has a tremendous leverage on pipe bending and with a hand lever only 4 ft. long one man can easily bend 1¼″ double strength pipe, cold. Illustration shows the machine bending a 1¼″ pipe to a continuous coil. Special Die for bending 1½″ pipe can be furnished, if desired.

No. 2—Iron Bender $75.00

WATERLOO

Bar Bending Machine

Mounted for Permanent Location



The Bender fastened to steel stand has proven very satisfactory for stationary work. The stand can be bolted to a platform or heavy plank and the bender is ready for use at all times.

We furnish a detachable handle seven feet long for convenience in handling the Bender.

Approximate weight of No. 2 Bar Bending Machine without stand, 110 lbs.

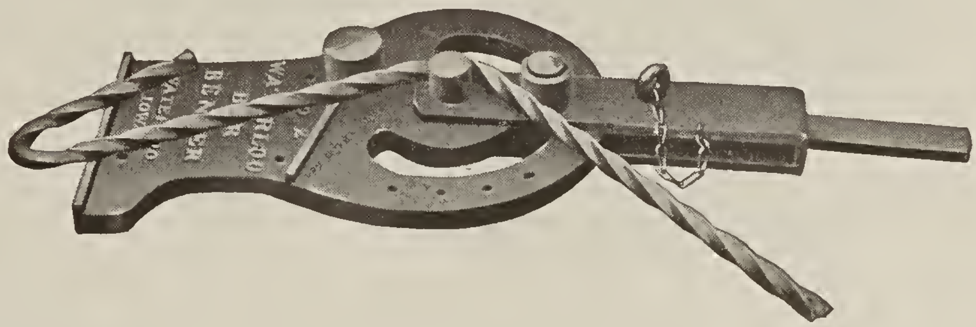
Approximate weight No. 3 Bar Bending Machine without stand, 185 lbs.

Approximate weight of Steel Stand for either Machine, 90 lbs.

We can refer you to hundreds of satisfied users.

Write us for prices or any further information desired.

WATERLOO
Bar Bending
Machine



The Waterloo Bar Bending Machine is made in two sizes and is guaranteed to bend bars as follows:

No. 2 bends Cold Reinforcing Bars up to and including 1⅛″ round or square.

No. 3 bends Cold Reinforcing Bars up to and including 1¼″ round or square.

The Waterloo Bar Bender is a durable, substantially constructed machine, so arranged as to bend reinforcing bars to various angles for all purposes in concrete work.

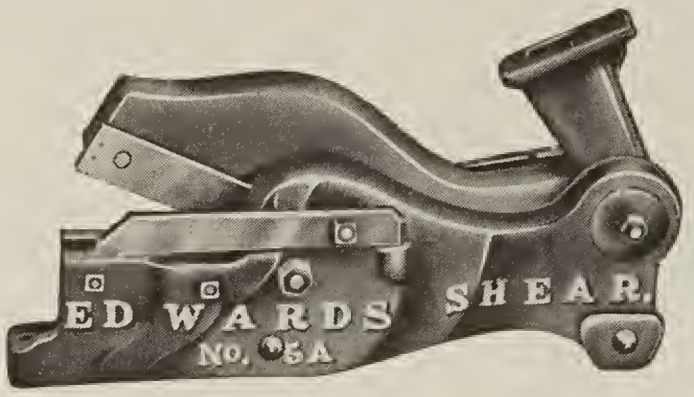
The bending posts on this machine are constructed of turned steel, the post revolving through the slot in the plate, being equipped with loose steel roller to avoid creeping of bar in bending.

Bars can be bent to a more uniform angle than by any other method, and get the maximum strength as designated by the Engineer.

Edwards No. 5 Iron Cutting Shear

For Cutting Small Reinforcing Rods on the Job

Since 1889
the Standard
Hand Power
Iron Working
Shear



Guaranteed
Free From
Defective
Material or
Workmanship
For One Year

Cuts Mild Steel 4 x ½ inches and ¾ inches round
Knives 7 inches long; weight 200 lbs.

The No. 5 Shear is built on the same principle as the No. 10, the difference being in the type of pinion, weight and size.

The Shear is to be fastened to the floor only at one end with a bolt or skein-screw, permitting the other end to be swung around to any position for cutting.

It sits low on the floor; consequently the operator has great power with the lever by standing above the shear. The low construction also makes it unnecessary to hold up the outer end of long bars when cutting.

Great advantage is found in the No. 5 and No. 10 because they are open end shears which makes it very handy to get the material in position to cut. It can do work that positively cannot be done on a closed end shear. It is ideal for cutting out corn plow shovels, seeder points, etc. It is recommended to cut plow steel ¼ x 6½ inches.

The Edwards No. 5 has been on the market for forty years and has proved itself to be the best and cheapest shear made. At the price for which they sell, no Contractor, Iron Worker, Blacksmith, Wagon Maker or Repair Shop can be without one. It is one of the handiest tools in a shop. Handle is furnished as an extra.

There are many makes of hand power shears on the market, but if a durable, compact, simple shear is wanted the Edwards is the best beyond question of a doubt. It has stood the test of time.

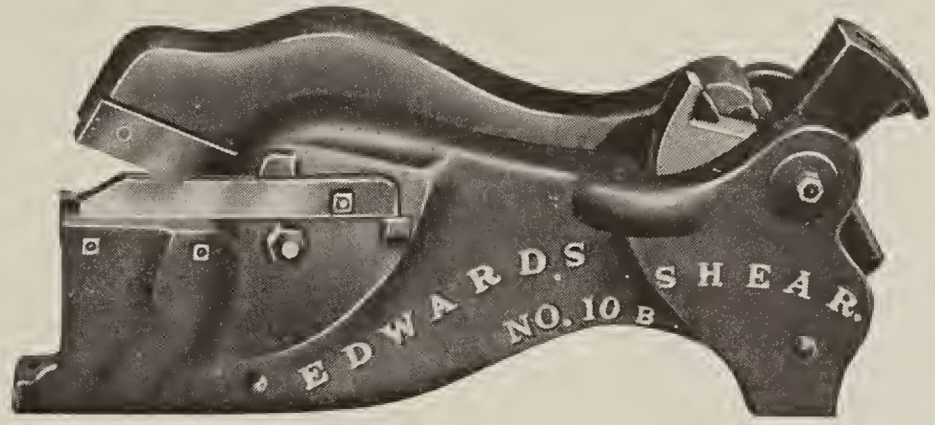
This shear will quickly pay for itself in the time alone that is saved in iron cutting, and in addition the purchaser will have added to his equipment a dependable fool-proof machine that will last a lifetime.

There are Edwards No. 10 and No. 5 Shears in operation today that have been in constant service for more than forty years.

Edwards No. 10 Iron Cutting Shear

The Contractors' Favorite the World Over

Since 1889
the Standard
Hand Power
Iron Working
Shear



Guaranteed
Free From
Defective
Material or
Workmanship
For One Year

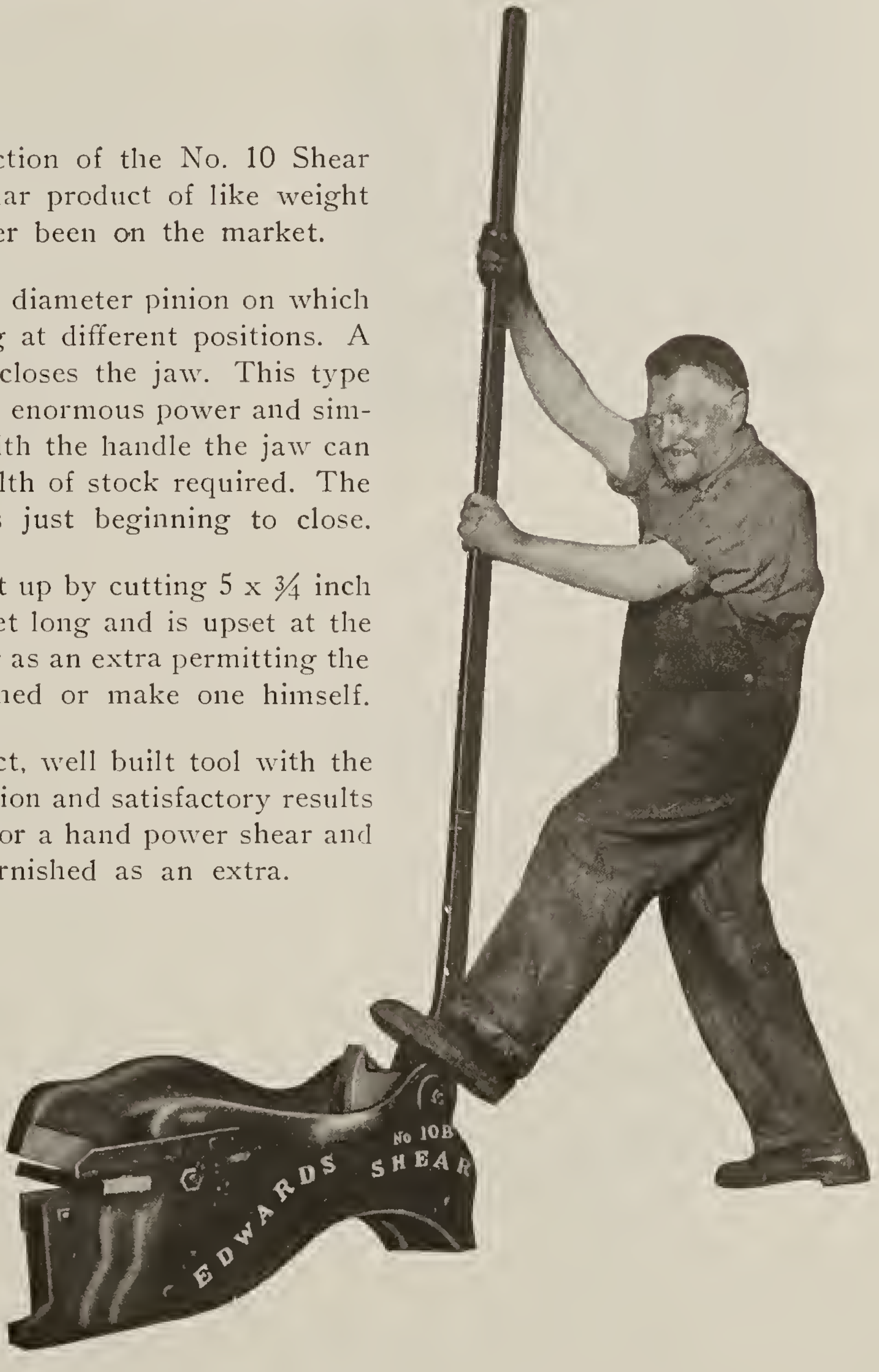
Cuts Mild Steel 4 x ¾ inches and 1 inch round
Knives 7 inches long; weight 460 lbs.

The general construction and action of the No. 10 Shear is by far the simplest of any similar product of like weight and shearing capacity that has ever been on the market.

The top jaw is moved by a small diameter pinion on which is cast three lever sockets standing at different positions. A complete revolution of the pinion closes the jaw. This type of construction is unequalled for its enormous power and simplicity. By revolving the pinion with the handle the jaw can be closed sufficiently to cut the width of stock required. The above illustration shows the jaws just beginning to close.

Every machine is tested when set up by cutting 5 x ¾ inch steel bars. The handle is seven feet long and is upset at the socket end. It is sold with the shear as an extra permitting the purchaser either to have it furnished or make one himself.

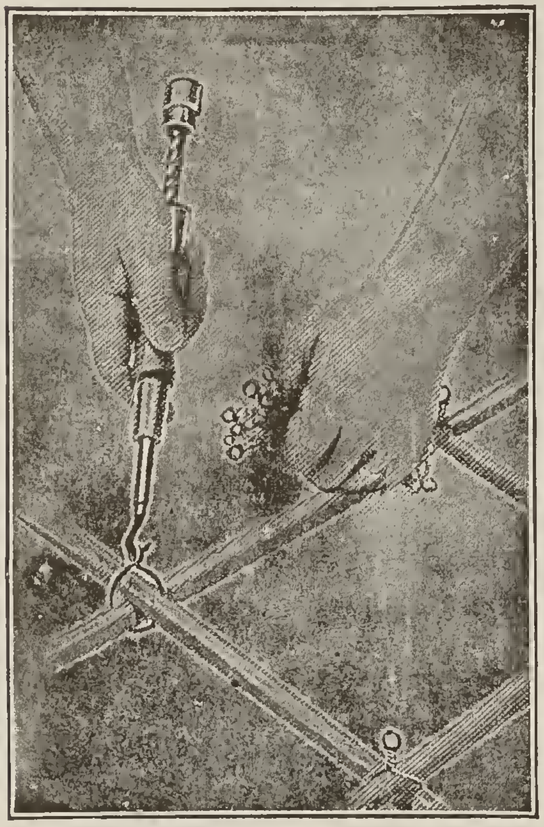
This shear is a powerful, compact, well built tool with the reputation of forty years of production and satisfactory results back of it. It is without an equal for a hand power shear and will last a lifetime. Handle is furnished as an extra.



There are many makes of hand power shears on the market, but if a durable compact, simple shear is wanted the Edwards is the best beyond question of a doubt. It has stood the test of time.

THE CURRY TYER

For Binding — Reinforcing Rods in Concrete Construction



ADVANTAGES

In large areas of reinforcing the binding of the intersections of the rods or mesh requires many laborers and is a slow and expensive operation.

The main requirements of this work are **Speed** and **Security** of tying.

The use of pliers and straight wire is very slow, generally insecure, and allows a large "human factor" to enter into it.

The **"Curry Tyer"** absolutely guarantees the **uniformity** and **security** of the tie by developing an **exact** number of twists in each and every operation. The rods cannot move or slip.

The **"Curry Tyer"** not only accomplishes the work in one third the time but does it **better.**

It is simply a matter of "hook on and pull," This means a great reduction of labor cost and in the number of men employed, with far greater efficiency and security.

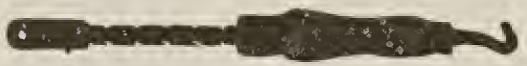
Full speed can be maintained in very cold or inclement weather.

No lost time or waste in cutting wire.

Wire ties of different lengths are supplied for the various combinations of rods.

A simple low cost, practical device.

Write for prices, terms and full information.



Spiral Type:
Simple, strong, durable.

Spring Return Type:
After tying, hook automatically returns to position for next operation.

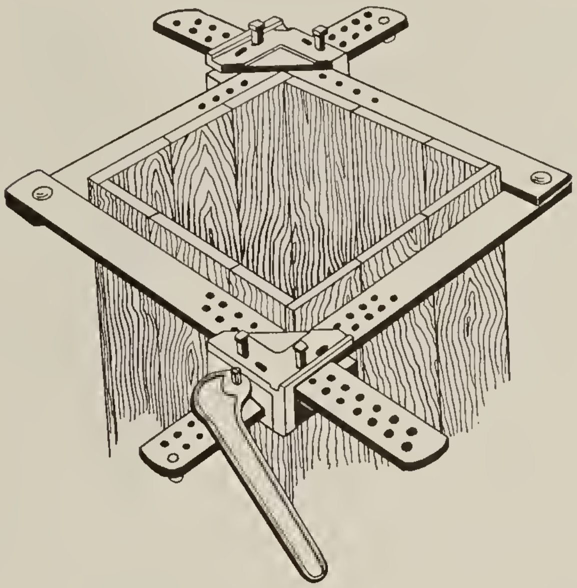
Either type equally efficient.

Length of Ties for Various Bars

Size of Bars	Round Bars	Square, Twisted or Corrugated
¼ inch and ¼ inch....	3 inch tie	3½ inch tie
¼ inch and ⅜ inch....	3½ inch tie	4 inch tie
¼ inch and ½ inch....	4 inch tie	4½ inch tie
⅜ inch and ⅜ inch....	4 inch tie	4½ inch tie
¼ inch and ⅝ inch....	4½ inch tie	5½ inch tie
⅜ inch and ½ inch....	4½ inch tie	5½ inch tie
⅜ inch and ⅝ inch....	4½ inch tie	5½ inch tie
½ inch and ½ inch....	4½ inch tie	5½ inch tie
⅜ inch and ¾ inch....	5 inch tie	6 inch tie
½ inch and ⅝ inch....	5 inch tie	6 inch tie
½ inch and ¾ inch....	5½ inch tie	6½ inch tie
⅝ inch and ⅝ inch....	5½ inch tie	6½ inch tie
½ inch and 1 inch....	6 inch tie	7 inch tie
¾ inch and ¾ inch....	6 inch tie	7 inch tie
¾ inch and 1 inch....	7 inch tie	8 inch tie
⅞ inch and ⅞ inch....	7 inch tie	8 inch tie
1 inch and 1 inch....	8 inch tie	10 inch tie
1¼ inch and 1¼ inch....	10 inch tie	11 inch tie

SUPPLIED IN COILS OF 5000 TIES

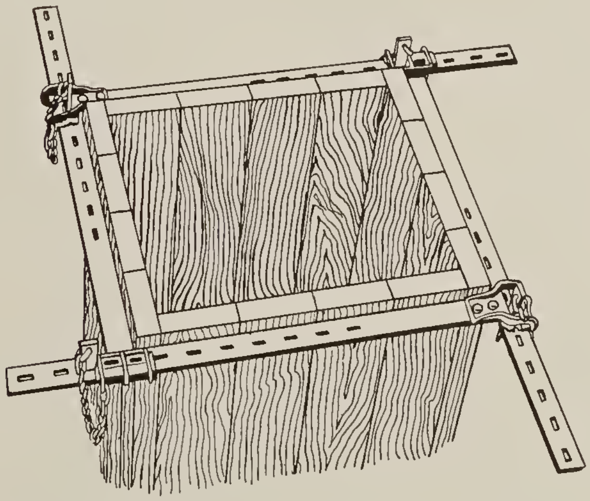
SYMONS COLUMN CLAMPS.



SYMONS OLD RELIABLE COLUMN CLAMPS

This clamp is one of the standard models which is regarded as necessary equipment by a great majority of contractors. This clamp is tightened with a wrench and held by steel cut nails which are furnished with regular equipment but which may be purchased at any hardware store.

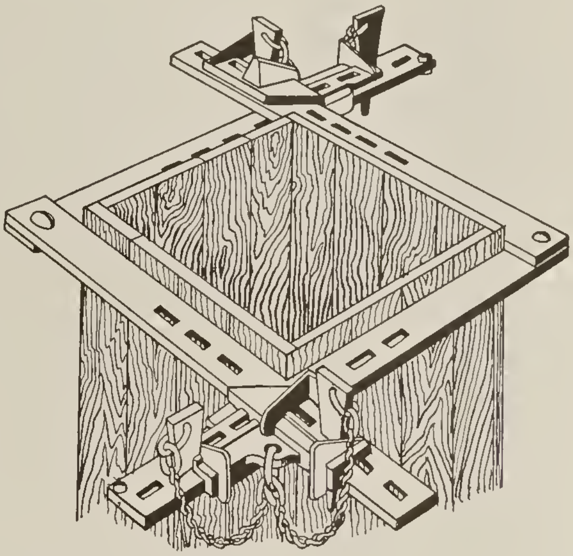
Size of Clamp	Size of Arms, Inches	Size of Columns, Including Forms	Price	Rental Price per Month
36"	2 x5/16x36	29"x29" to 10½"x10½"	$2.50	$0.25
48"	2½x5/16x48	40"x40" to 16 "x16 "	3.60	.30
60"	3 x5/16x60	52"x52" to 27 "x27 "	5.75	.35
48"x72"	3 x5/16x72 Reinforced	38"x62" to 12 "x40 "	5.75	.40
72"x72"	3 x5/16x72 Reinforced	62"x62" to 40 "x40 "	5.75	.40



SYMONS FOUR-PIECE COLUMN CLAMP

This clamp has a greater range of adjustment per length of arm than any other clamp. No detachable parts. Hammer only tool required. May be used with Ever Square Clamp in corners or against walls.

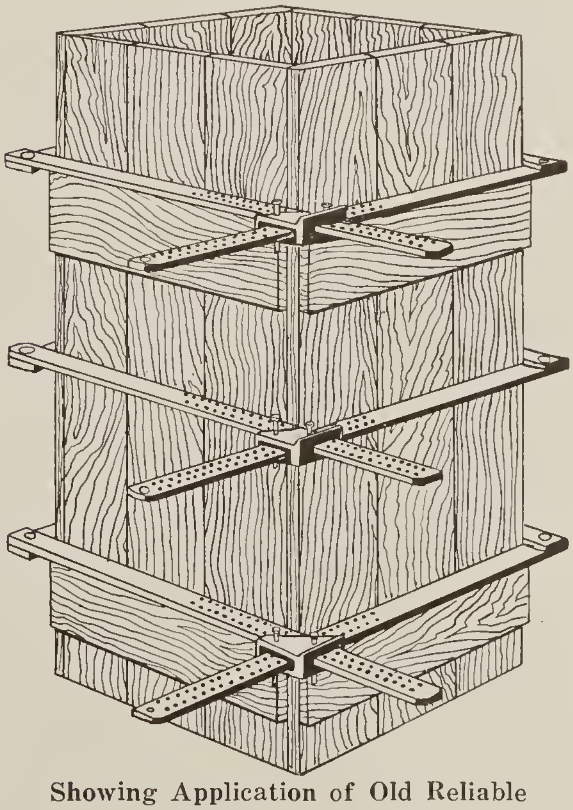
Size of Clamp	Size of Arms, Inches	Size of Columns, Including Forms	Price	Rental Price per Month
36"	2 x5/16x36	33"x33" to 11"x11"	$3.50	$0.25
48"	2½x5/16x48	43"x43" to 14"x14"	4.60	.30
60"	3 x5/16x60	52"x52" to 24"x24"	5.75	.35
48"x72"	3 x5/16x72 Reinforced	38"x62" to 12"x40"	5.75	.40
72"x72"	3 x5/16x72 Reinforced	62"x62" to 40"x40"	5.75	.40



SYMONS EVER SQUARE COLUMN CLAMPS

Just the clamp to square up the columns. No detachable parts. Requires only a hammer to put on or take off. Adjustable to smallest fraction. Bars made of alloy steel for strength and lightness. Entire bracket made in two pieces.

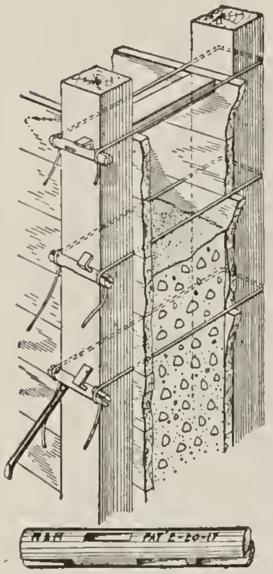
Size of Clamp	Size of Arms, Inches	Size of Columns, Including Forms	Price	Rental Price per Month
36"	2 x5/16x36	29"x29" to 10½"x10½"	$3.50	$0.25
48"	2½x5/16x48	40"x40" to 16 "x16 "	4.60	.30
60"	3 x5/16x60	52"x52" to 27 "x27 "	5.75	.35
48"x72"	3 x5/16x72 Reinforced	38"x62" to 12 "x40 "	5.75	.40
72"x72"	3 x5/16x72 Reinforced	62"x62" to 40 "x40 "	5.75	.40



Showing Application of Old Reliable Clamp to Column Form.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

M & M FORM CLAMPS

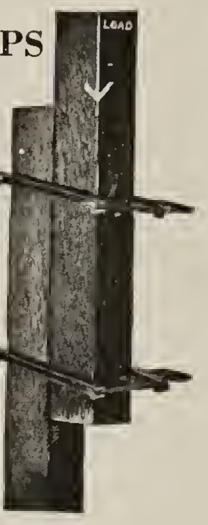


M & M WIRE CLAMPS

The M & M Wire Clamp is a rapid and positive means of clamping forms. It does not twist the wires but draws them taut. M & M Wire Clamps save time, labor and material and they work efficiently for clamping walls, beams, columns or soffit forms.

Size	Weight per 100	Price per 100
No. 1, for 4x4's	85 lbs.	$24.20
No. 2, for 2x4's	80 lbs.	24.20

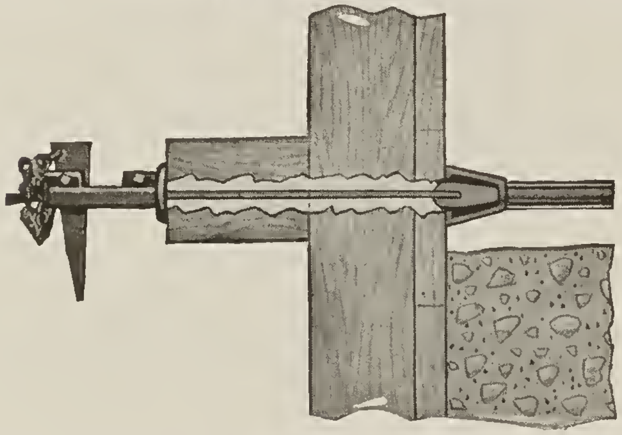
M & M SPLICING CLAMPS



M & M Splicing Clamps are a fast and simple clamp for splicing 4x4's together. They are a one-piece clamp. These clamps will carry a load of 2000 pounds per clamp. No special tools required; drive or release the wedge with a hand-axe.

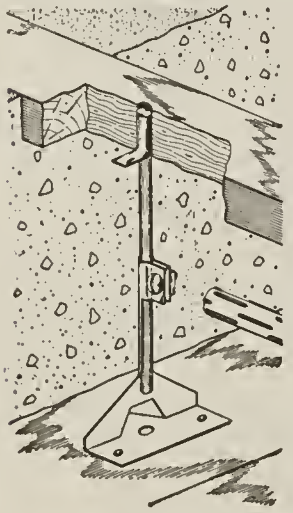
Size	Weight each	Price each
No. 4, Standard	3¾ lbs.	$.71
No. 4, Special	4 lbs.	.77
No. 4, Open Back	4 lbs.	.77

M & M CONCEALED TIE ROD CLAMP



The M & M Concealed Tie Rod Clamp is a specification tie and eliminates exposed steel on the surface of the concrete. These clamps have continuous take-up and require no special tools for placing, releasing and adjusting. Pipe is used as a spreader between the cups. This permits the immediate removal of the threaded rods for re-use.

Size	Weight	Price
For ½" Rod	3 pounds each	$ .71
Metal Cups	32 pounds per 100	8.80
½" Rods, threaded	per foot	.06½



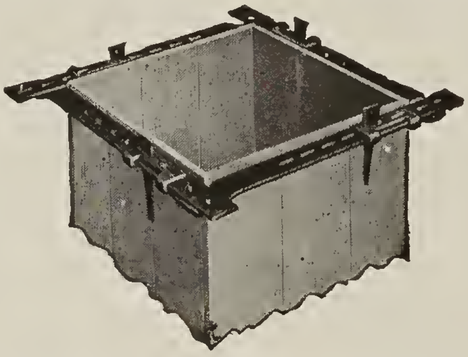
M & M TARGETS

M & M Targets are used for leveling concrete slabs, supporting wood floor strips, or supporting inside spandrel beam forms. The Targets can be used either with or without wood strips for leveling concrete slabs. They give an accurate and fast method for leveling slabs.

Size	Weight	Price
Targets (KD)	12 lbs. per 100	$5.50
Caps or Flags	1½ lbs. per 100	.82

Targets made up any height desired. Prices on application.

M & M COLUMN CLAMPS

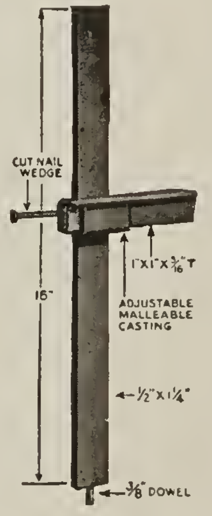


M & M Column Clamps have continuous take-up and perfect adjustment. Our Column Clamps eliminate special tools, all adjusments are made by driving the wedges with a hammer.

Size	Weight	Price
No. 5 Columns from 10" to 25"	27 pounds	$3.19
No. 6 Columns from 14" to 36"	45 pounds	4.78
Wedges chained on, add per clamp		.25

Rental Prices on application.

M & M SCREED GAUGES



M & M Screed Gauges are used for leveling concrete slabs accurately and economically. These Gauges are the only adjustable gauge ever designed with 100% use and 100% re-use or salvage. All adjustment is made with a hammer. The cost of setting up the gauge is less than ¼ the cost of using wood for the purpose.

Sizes	Weight	Price
16" Gauges	3¾ pounds each	$ .55
1"x1"x$\frac{3}{16}$" Tee Bar	1.2 pounds per ft.	.07 per ft.

Send for our complete 20 page catalog describing and illustrating the full M & M Line of Labor and Material-Saving Clamps for Concrete Forms.

List Prices F. O. B. Minneapolis, Minn. Discounts Upon Application.

M & M FORM CLAMPS

M & M
ADJUSTABLE SHORES

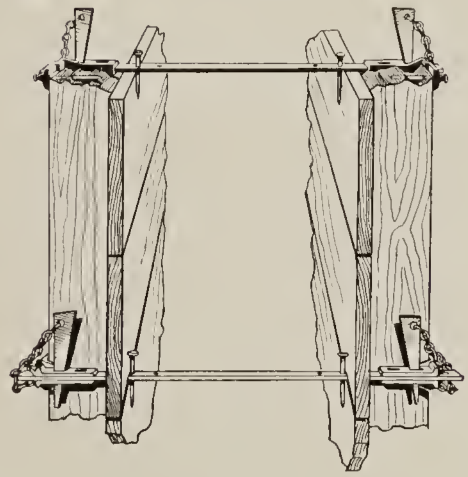
The M & M Adjustable Shore is a complete unit shore which can be placed, locked and adjusted by one man. It has a safe working load of 4000 pounds and will lift a load in excess of 1000 pounds by driving the wedge with a carpenter's hammer. The Shore is used for shoring or reshoring slabs. Our Shores have no working parts which will wear out and require replacements.

Size	Weight	
7′ extending to 12′6″	55 lbs. each	Price $5.06
8′ extending to 14′6″	60 lbs. each	Price $5.22

M & M
TIMBER SHORES

Your random length 4x4's can be used with M & M Timber Shores without cutting or splicing. This low priced shore is a very economical piece of equipment and has a working load of 4000 lbs. These Shores are fast to place, release or adjust with an ordinary carpenter's hammer. The adjustment of this shore is perfect and positive and is used for shoring or reshoring concrete slabs.

Size	Weight	
5′ 6″ Adjustment	36 lbs. each	Price $3.30

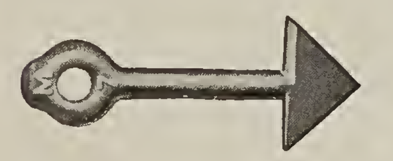


M & M ADJUSTABLE STRIP TIE AND SPACER

The M & M Strip Tie and Clamps are a cheap and efficient method for clamping forms and spacing forms. Their adjustment is perfect and positive and they are placed, released and adjusted with a carpenter's hammer. Each M & M Tie can be used on five different sizes of forms. This is a very efficient and cheap system to use on narrow walls.

Size	Weight	Price
Strip Tie Clamps	33 pounds per 100	$13.20
Tie A for 8″ to 12″ walls	29 pounds per 100	5.50
Tie B for 12″ to 16″ walls	34 pounds per 100	5.77
Tie C for 16″ to 20″ walls	40 pounds per 100	6.05
Tie D for 20″ to 24″ walls	46 pounds per 100	6.32

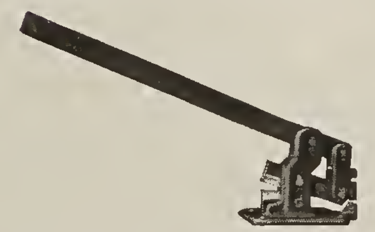
M & M
SHEETING DARTS



M & M Sheeting Darts are used for attaching the inside wall forms to the wood sheeting which is placed to support an adjacent street or property. M & M Sheeting Darts are real labor and material savers.

M & M Sheeting Darts—
18 pounds per 100..........Price $5.50

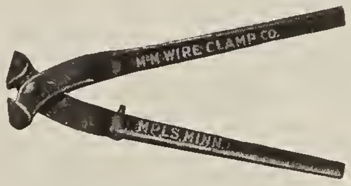
M & M
WIRE CUTTERS



M & M Wire Cutters are used for cutting form wires and materially speed up this operation. The blades are held open by a spring. The labor saved in one day will pay for an M & M Wire Cutter.

M & M Wire Cutters—
8 pounds each...............$5.50
Extra Blades—
1 pound per set............. 1.65

M & M
WIRE NIPPERS



For clipping off form wires and nails from concrete surfaces, you will find that the M & M Wire Nipper will prove efficient. These nippers have a wide cutting edge and long leverage. It is easy to clip wires with M & M Wire Nippers.

M & M Wire Nippers—
5 pounds each...............$4.95
Extra Blades—
1 pound per set............. 1.65

Send for our complete 20-page catalog describing and illustrating the full M & M Line of Labor and Material-Saving Clamps for Concrete Forms.

List Prices F. O. B. Minneapolis, Minn. Discounts Upon Application.

UNIVERSAL FORM CLAMPS

Save Money on Every Construction Job

Tying forms for concrete is greatly simplified with Universal Form Clamps. They can be used under any conditions and are adjustable to any design of form for walls and columns.

A single unit simple in design and application

On any column of any height, any pier, wall or abutment of any size, Universal Form Clamps insure accurate forms. They absolutely prevent spreading and thereby save many extra yards of concrete.

The real economy of the Universal Form Clamp lies in its simplicity and adaptability. It is quickly applied and easily removed, bringing big savings in time and labor. The cross section below shows it to be a simple casting with a flanged bearing surface having an oval hole with shoulders at the small side through which a plain tie rod is passed. The set screw depresses the rod between the shoulders securely engaging the clamp on the rod, absolutely preventing its slipping or moving. The set screw does not carry the load but throws it on the shoulders of the clamp.

One man can tie up forms with Universal Form Clamps. He simply slips the clamp over the end of the tie rod, jacks the form in line with the Universal Tightener and tightens the clamp in the desired position by turning the set screw. They are used with plain tie rods—there are no exposed threaded parts to fill up with concrete.

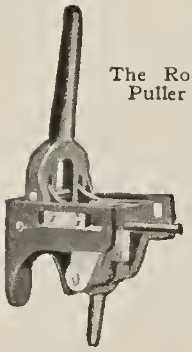
These clamps are equipment in the truest sense of the word—are adaptable to all jobs and can be used again and again.

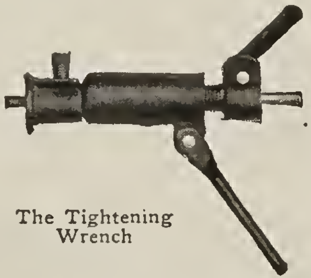
The Tightening Wrench. After the clamp has been placed on the rod, the form is drawn into line with the tightening wrench shown below. When the form is in position the clamp is tightened on the rod.

The Rod Puller. This rod puller, for removing the tie rods from the concrete after it has set sufficiently, enables a man to exert a pressure of from 10,000 to 15,000 lbs., depending on the length of pipe used in the handle. The rods are not bent in pulling and can be used indefinitely.

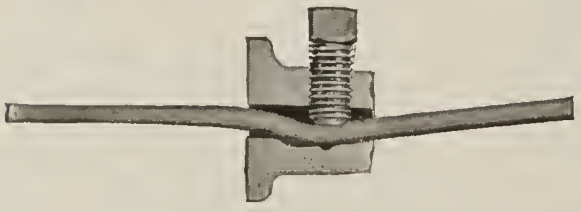
Sizes and Capacities of Universal Form Clamps

Clamp	Size of Rod	Base Diam.	Length	Weight Per 100 Pieces	Rod Capacity at 16,000 lbs.	Yield Point of Rod	Tested Load at First Slip	Average Strength Max. Load	Condition at Maximum Load
No. 1	¼"	2"	1⅜"	60 lbs.	785 lbs.	2200	No slip	2890	Rod broken
No. 2	⅜"	2⅜"	1⅞"	107 lbs.	1765 lbs.	4710	No slip	6210	Rod broken
No. 3	½"	2½"	2"	126 lbs.	3150 lbs.	9160	7045	10320	Rod slipped
No. 4A	⅝"	3"	2"	235 lbs.	4850 lbs.	12200	9100	14100	Rod slipped
No. 4X	⅝"	3¼"	2¾"	267 lbs.	4850 lbs.	12200	11000	15500	Rod slipped
No. 5	¾"	4⅝"	3½"	520 lbs.	7050 lbs.	19350	14550	23760	Rod broken


The Rod Puller


The Tightening Wrench

Pat. Aug. 13, 1918


This cross section shows the sure grip of the clamp on the rod after the set screw is tightened

UNIVERSAL FORM CLAMP CO.
Chicago, Illinois

UNIVERSAL CONE NUTS

for Watertight and Stainless Walls

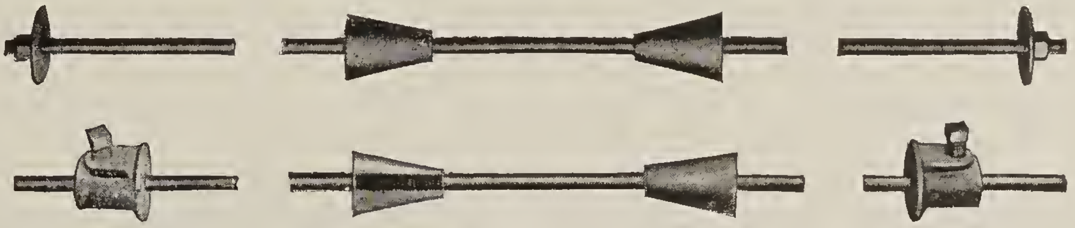
Universal Cone Nuts space the forms and hold them rigid while concrete is being poured. They are particularly adaptable for tying forms on reservoir work, sewage disposal plants and wherever a watertight and stainless job is required. Elimination of all exposed metal on the faces of the walls is made easy by this simple method.

Universal Cone Nuts are rod couplings placed so that the large end of the cone is flush with the face of the wall. With inside tie rods, they act as a separator. The outside or stud rod should be threaded only on the end going into the cone and Universal Form Clamps used against the wale. These form clamps permit the use of varying sizes of form lumber, eliminate threading on this end and do away with ordinary nuts and washers. These form clamps can also be used on plain rods if any part of the work does not require Cone Nuts.

Universal Cone Nut castings are machined on the entire outside surface after being tapped, which insures perfect concentricity and smoothness and makes them extremely easy to remove. In addition to these cast cone nuts, there are available Steel Cone Nuts in ⅜″ and ½″ sizes. These steel cone nuts are of much smaller diameter than the casting and leave a correspondingly smaller hole to grout, are cheaper and just as strong.

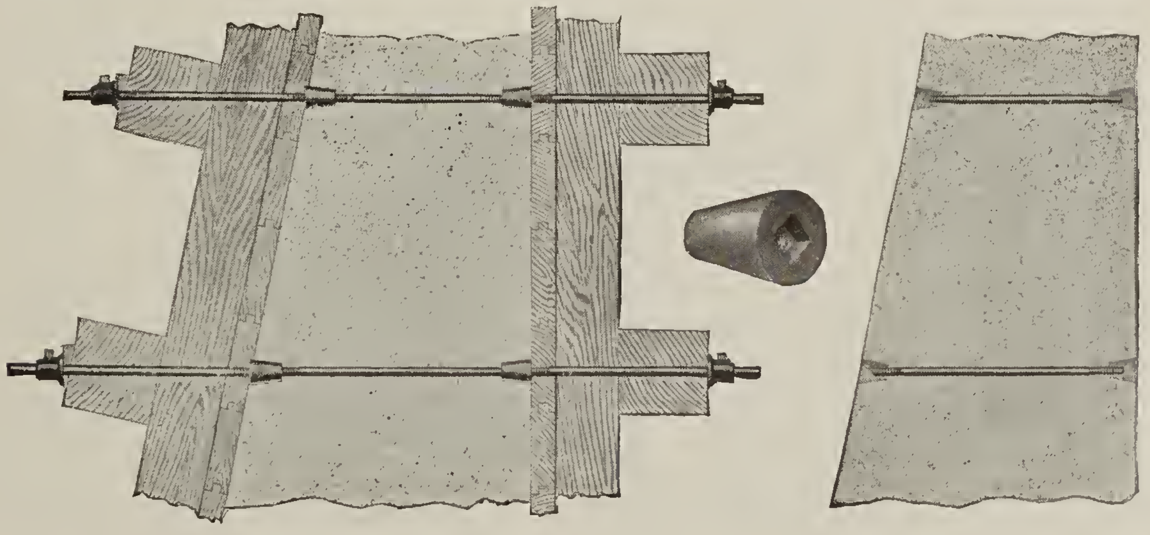
Grouting the hole is a quick and simple operation. The grout is permanently anchored in the hole by the threads on the ends of the tie rods.

Universal Cone Nuts and Form Clamps save labor, eliminate spreaders, make safe forms and are equally adaptable to panel forms or ordinary form construction. Remember that there are no exposed threads to become blocked with concrete.


Patented

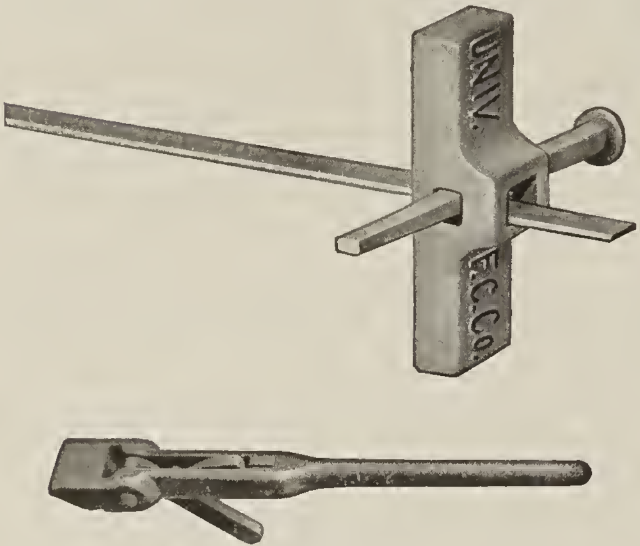
Universal Cone Nuts (Couplings)

Nut	Size of Rod	Base Diam.	Length	Wt. Per 100
No. 2	⅜″	1 9/16″	2⅛″	45 lbs.
" 3	½″	2 ″	2⅝″	108 "
" 4	⅝″	2 ″	2⅝″	112 "
" 5	¾″	2 13/16″	3⅜″	235 "
" 6	⅞″	2⅝″	3½″	280 "



UNIVERSAL BAND CLAMPS AND WIRE CLAMPS

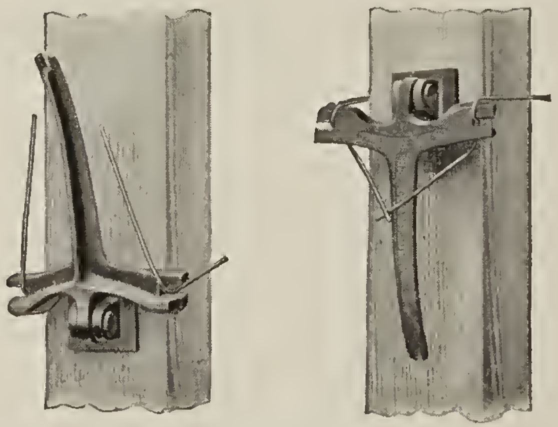
for Walls and Spandrels



Patented

This clamp is particularly adapted for tying forms for walls and spandrels where the load does not exceed 1600 lbs. For heavier loads round rods with Universal Rod Clamps are recommended. The sturdy malleable iron casting contains a slot through which the ½ x 14 gauge band passes. A 30-penny standard cut nail driven through the opening in the side of the clamp locks the band in place so firmly it can never slip. The clamp is symmetrical; there is no top or bottom and the nail can be inserted from either side. The tightening tool has a draw of over an inch and will pull the forms in line in an instant. A spring keeps the cam in constant contact with the band when operated.

The Universal Wire Clamp is a self-locking, self-contained unit; no loose parts are required to fasten it in place. The hinged base gives firm bearing on either studding or wall. All of the tightening is done from the outside, a particular advantage in narrow walls. All the costly time expended in twisting wire, often past its elastic limit, is avoided with Universal Wire Clamps. They are made 2¼″ and 4¼″ wide to apply on studs or wales.



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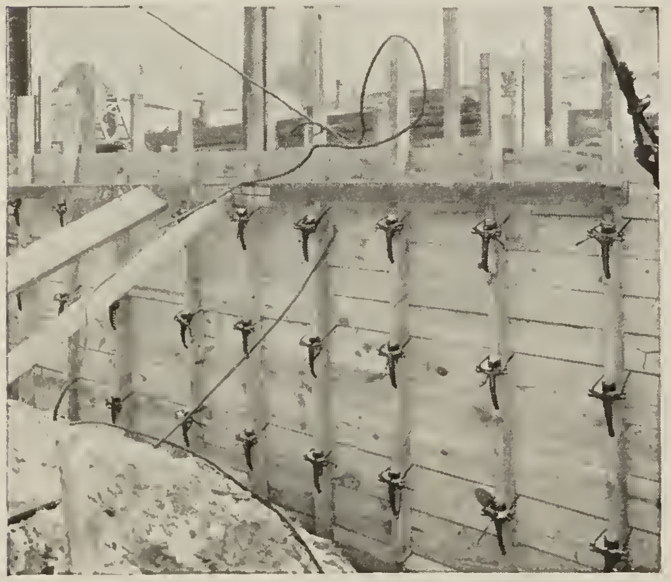
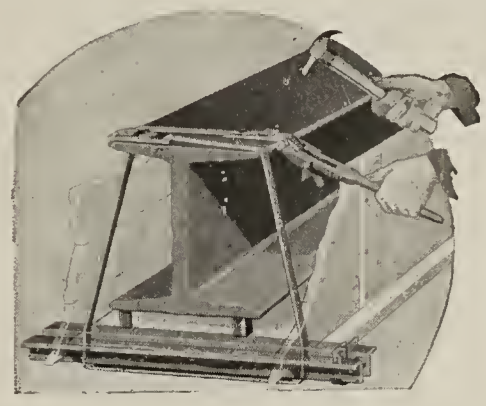
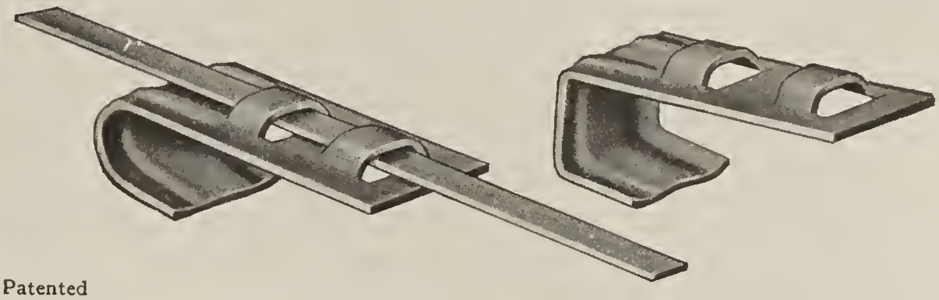


UNIVERSAL BEAM CLAMPS AND METAL CLEATS

for Hanging Forms From Structural Steel





The Beam Clamp as shown above is a heavy stamping designed to hook over the top flange of structural beams and girders to hold the ½″ x 14 gauge bands which suspend the forms. These clamps are made in five sizes; for standard I-beams, and Carnegie and Bethlehem sections with flanges up to 1¾″ thick. The band iron is slipped under the two raised lugs, drawn up tight with a Universal Band Tightener, and the lugs hammered down. This simple and quick device gives a double grip which will hold the full strength of the band.

With these Beam Clamps, several methods of framing are available. First, by boring holes in 2″ x 4″ or 4″ x 4″ wooden cleats. Again, the band may be placed diagonally under a wooden cleat. Because the band cuts into the side of the cleat, this method is sure to cause a considerable deflection; but by using Universal Metal Cleats, all wooden cleats and their accompanying deflections and high costs are eliminated.

This Universal Metal Cleat is 30″ long and made of two 1¼″ x ⅛″ angles so riveted together that the ½″ band passes between them. They are secured to the beam by nail holes in the upper flanges. Two castings around which the band iron passes, are held in place by cotter pins through holes in the vertical flanges of the cleat. These holes are spaced 1″ on center, enabling these castings to be adjusted for any width of beam bottom. Since the band iron is placed outside of the edges of this beam bottom, there is no necessity of boring holes in it. A kicker plate casting containing a fastening wedge, slides in the slot between the angles and holds the bottom of the beam sides in position. There are no loose parts to handle, the entire unit being self-contained.

Band Iron and Safe Loads

The Universal Beam Clamps are used with ½″ by 14-gauge band iron. The band this company furnishes contains an extra carbon content that adds considerably to the tensile strength above that of commercial stock. Because it is obtained in carload lots, it is sold for no more than ordinary hoop steel. A series of tests made by the Robt. W. Hunt Co. gives the following as average for this special band:

Yield Point	*Maximum Load*
2050 pounds	3000 pounds

Universal Beam Clamps will hold the full strength of the band. In considering the strength of a complete hanger, it should be treated as two bands, and the permissible single band load doubled.

Universal Soffit Spacers

are used for separating and holding the soffit board away from the "I" beam or steel girder to insure concrete fireproofing below the beam.

The Soffit Spacer is absolutely essential in work where the beam bottoms are suspended from the structural frame. It takes only an instant to place them at the desired intervals on the soffit board and the soffit can then be drawn up as tight as desired without changing the depth of fireproofing. They are made in any height.

Soffit Spacers are used to equal advantage on fireproofed steel columns, and for spreaders for narrow wall forms.

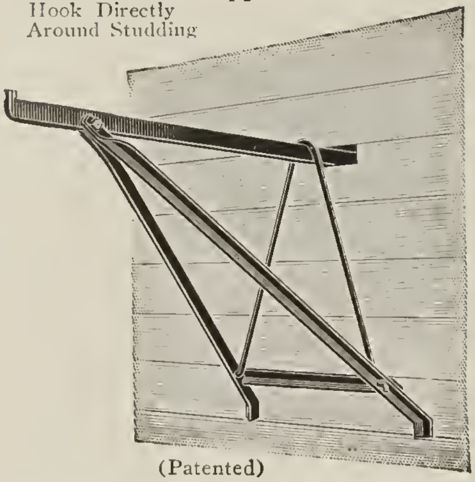
Universal Metal Cleats are rented with an option to purchase.

"TROUBLE SAVER" STEEL SCAFFOLDING

SCAFFOLD BRACKETS

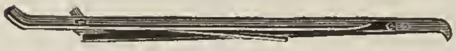
"Trouble Savers"
Studding Brackets
Will Support a Ton

Hook Directly
Around Studding



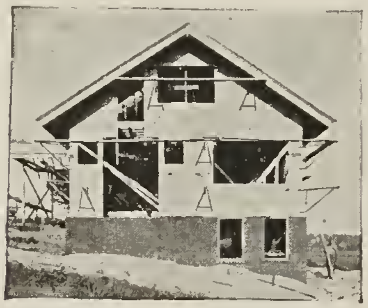
(Patented)

Folded for Cartage and Storage

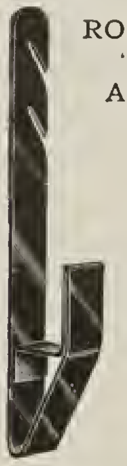


They Occupy Little Space

Length	Weight Per Doz.	Price Per Doz.
2½ feet	144 lbs.	$27.00
3 feet	168 lbs.	30.00
3½ feet	204 lbs.	36.00
4 feet	220 lbs.	42.00



"Trouble Saver" Scaffold Brackets never interfere with your grading. Your lumber is never tied up in scaffolding. "Trouble Saver" Brackets are always ready for instant use.

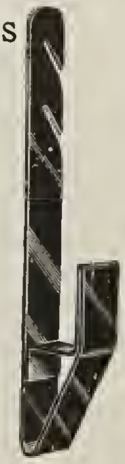


ROOF BRACKETS

"Trouble Saver"
Asphalt Shinglers

For Asphalt Shingles

Two nails can be used when thought necessary. Not necessary to raise shingle to remove.



Price per dozen (to take 2 x 4 edgewise), $6.00
Weight per dozen, 17½ lbs.
Price per dozen (to take 2 x 4 sidewise), $7.50
Weight per dozen, 19 lbs.

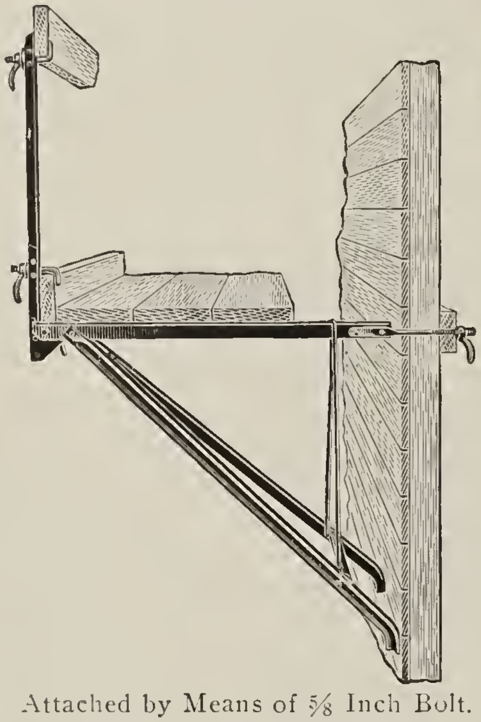
Notice: When ordering Asphalt Shinglers to take 2 x 4 sidewise, specify Wide Asphalt Shinglers.

"Trouble Saver" Scaffold Brackets are the SAFEST brackets on the market. The two-legged feature eliminates all wobble and side sway. They will support a ton and will give a lifetime of service.

THE NEW "TROUBLE SAVER" BOLT SCAFFOLD BRACKET

(Patented)

With Detachable Rail Standards



Attached by Means of ⅝ Inch Bolt.

Has the Approval of State Industrial Commissions.

All Hazards Reduced by the Rail Standard.

Used by Stuccoers, Carpenters and General Contractors.

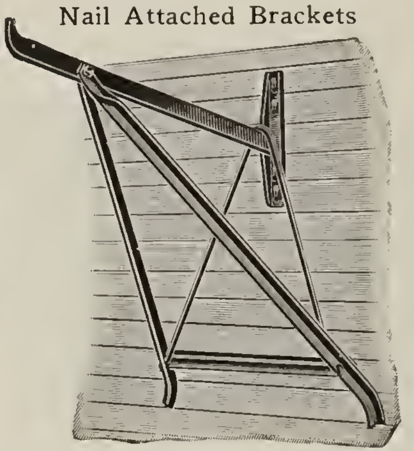
Can Be Used With or Without Rail Standards.

Folds Compactly for Cartage and Storage.

Size	Price Per Doz.	Weight Per Doz.
3 foot	$33.00	180 lbs.
3½ foot	39.00	222 lbs.
Rail Standards	15.00	60 lbs.

SCAFFOLD BRACKETS

"Trouble Saver"
Nail Attached Brackets



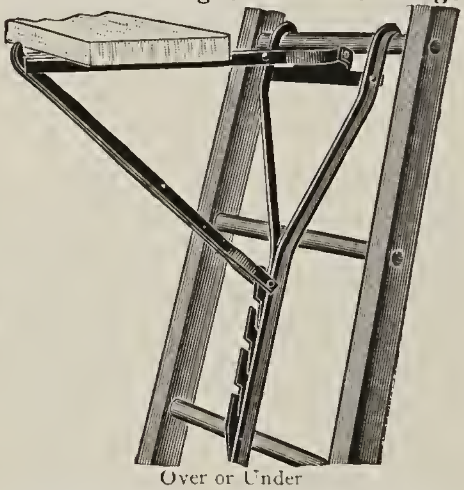
(Patented)

Just 4 Nails—That's All
10, 16 or 20d.
The Two Legs Brace Them at the Right Place

Length	Weight Per Doz.	Price Per Doz.
3 feet	176 lbs.	$33.00
3½ feet	220 lbs.	39.00

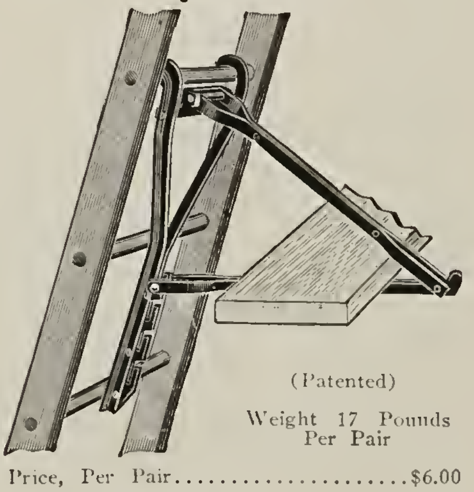
"ONE MAN" LADDER JACKS

Takes the Weight on Three Rungs



Over or Under

STRONGEST, QUICKEST AND HANDIEST LADDER JACK ON THE MARKET — INSTANTLY ADJUSTABLE



(Patented)

Weight 17 Pounds Per Pair

Price, Per Pair $6.00

ALL PRICES F. O. B. FACTORY
Manufactured by
THE STEEL SCAFFOLDING COMPANY
Evansville, Indiana

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

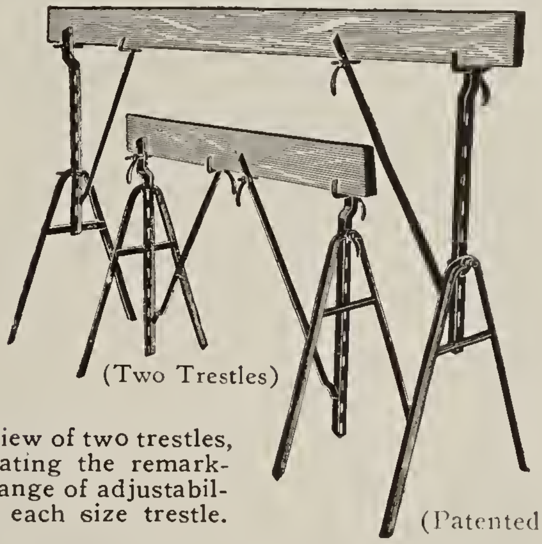
"TROUBLE SAVER" STEEL SCAFFOLDING

"Trouble Saver" Adjustable Trestles

A safe, sure, low-cost method of handling all overhead work. Painters, plasterers, sheet metal workers, mill wright men, masons and contractors—all can make a real saving in time, labor and material with "Trouble Saver" Adjustable Steel Trestles. They are in widespread use wherever contractors are awake to the economies of modern equipment.

Modern Industrial Plants, too, are adopting "Trouble Saver" Adjustable Trestles for their repair, maintenance and mill wright work.

Made of rail carbon steel. They will not bend. Each trestle will support more than a ton with safety.


(Two Trestles)

End view of two trestles, illustrating the remarkable range of adjustability of each size trestle.

(Patented)

All trestles have three-inch adjustments from low to high point. Any size timber from a 2x4 to 2x12 can be used. Trestles fold compactly for cartage and storage. Quotations are for each trestle and do not include timbers.

Two trestles are illustrated above and also in picture at the upper right hand side of this page.

Order by the trestle.

SIZES AND PRICES

F.O.B. Evansville, Ind.

No. 2—is 16 inches high at lowest point and 22 inches high at highest point. Weight, 15½ Lbs. Price, $5.00.

No. 3—is 2 feet high at lowest point and 3 feet high at highest point. Weight, 21½ Lbs. Price, $6.00.

No. 3½—is 2½ feet high at lowest point and 3½ feet high at highest point. Weight, 24½ Lbs. Price, $6.50.

No. 4—is 3 feet high at lowest point and 4¼ feet high at highest point. Weight, 28 Lbs. Price, $7.00.

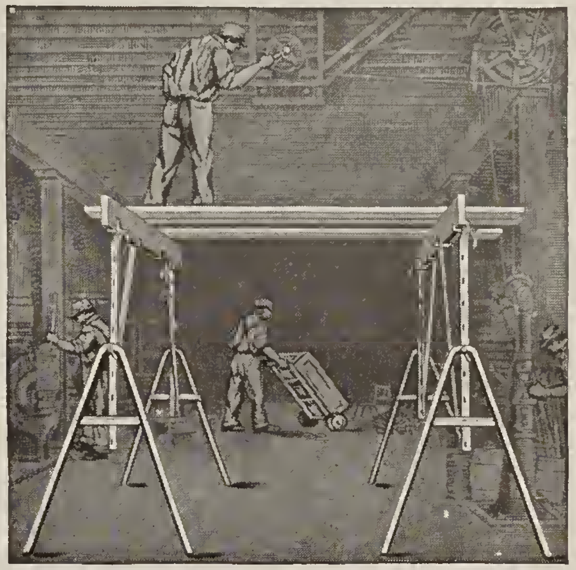
No. 6—is 4 feet high at lowest point and 6 feet high at highest point. Weight, 53 Lbs. Price, $9.00.

No. 8—is 5½ feet high at lowest point and 8 feet high at highest point. Weight, 74 Lbs. Price, $12.00.

No. 10—is 6½ feet high at lowest point and 10 feet high at highest point. Weight, 113 Lbs. Price, $18.00.

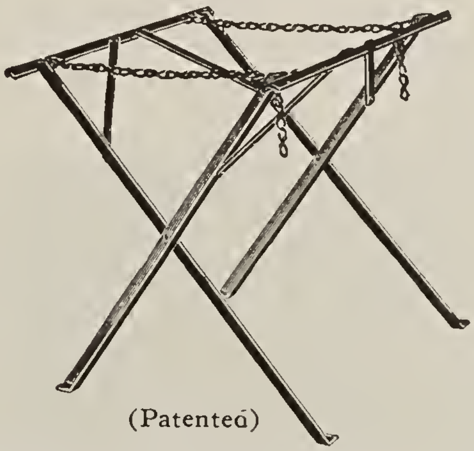
No. 12—is 7 feet high at lowest point and 12 feet high at highest point. Weight, 153 Lbs. Price, $21.00.

Manufacturers in every field are adopting "Trouble Saver" Adjustable Trestles. Below . . . a difficult job made easy with "Trouble Saver" Adjustable Trestles.



(Below) "Trouble Saver" Adjustable Trestles at work for a prominent plastering contractor. Notice the strong and convenient "Trouble Saver" Mortar Board Stand on top of scaffold.

"Trouble Saver"
Mortar Board Stand



(Patented)

Ruggedly built of rail carbon steel . . . strongly braced. Instantly adjustable by chain links to exact working height.

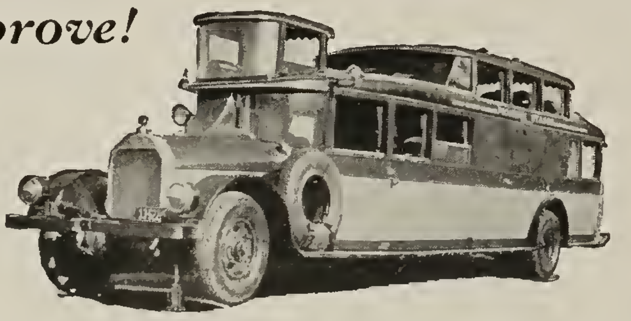
No. 1—Mortar Board Standard 18" high, price each $5.00. Weight each, 29 Lbs.

No. 2—Mortar Board Stand 30" high, price each $6.00. Weight each, 32½ Lbs.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

Blackhawk Truck Jacks are standard with Mack, Brockway and many others. They approve.

You, Too, Will Approve!

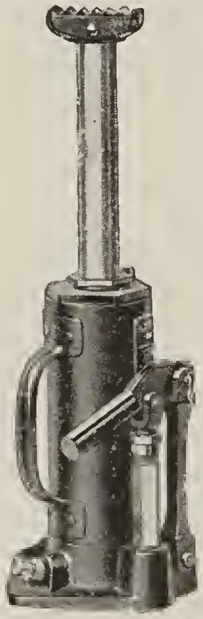


Pickwick States System uses more than a thousand Blackhawk motorcoach jacks and have for several years. Essential for on time service and passenger convenience. They, too, approve.

MOTORTRUCK JACKS

Blackhawk truck jacks are everywhere called upon for the elimination of roadside delays. Not necessary to unload when wheel is in a rut or blowout occurs — a Blackhawk will lift the job easily and safely.

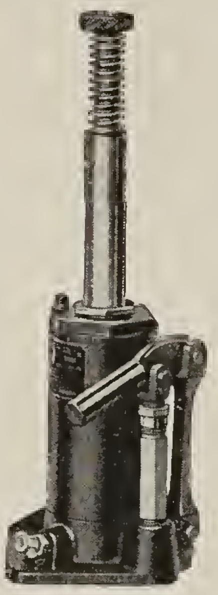
Standard 34″ 2-piece handle on all except the D11 which has a 20″ one piece handle.



Cap. Tons	*Model*	*Height*	*Lift*	*Weight Packed*	*Price*
3	A9	9″	5″	18½ lbs.	$17.50
3	A11	11″	7″	20 lbs.	18.50
7	C 9	9″	5″	19½ lbs.	22.50
7	C11	11″	7″	21¼ lbs.	25.00
12	D11	11″	6¼″	29 lbs.	35.00

MOTORCOACH JACKS

Present day demands for on-time service and passenger convenience call for a compact, powerful Blackhawk jack wherever trouble arises. Have hand screw extension for underslung buses. Standard 34″ 2-piece handle.

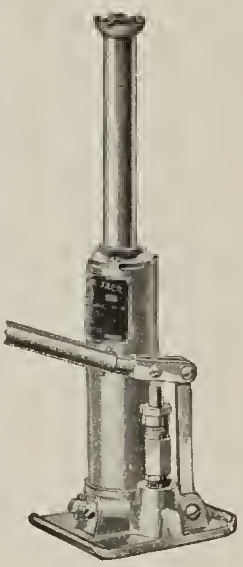


Cap. Tons	*Model*	*Height*	*Lift*	*Hand Extension*	*Weight Packed*	*Price*
3	A8.5	8½″	5″	3¼″	16¾ lbs.	$19.00
7	C8.5	8½″	5″	3¼″	19 lbs.	25.00

CAR OWNER JACKS

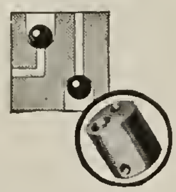
Compact, light and sturdy and designed for every passenger car or light truck requirement Have sturdy 2-piece handles, 34″ long, with bayonet lock. Special J-10 jack has adjustable toe giving extreme range of lift.

L7 and B7.5 both have hand screw extension and in addition B7.5 has telescopic ram for greater height.



Cap. Tons	*Model*	*Height*	*Lift*	*Extension*	*Weight Packed*	*Price*
1	L7	7″	4½″	2″	8½ lbs.	$7.50
1½	T8.5	8½″	6″		9½ lbs.	7.90
¾-1½	J-10	3½-10″	6″		18 lbs.	12.00
2	B7.5	7⅜″	8″	2⅝″	16 lbs.	20.00

A 50 per cent saving in production on the simple job of pressing in bushings was accomplished with a 7-ton Blackhawk jack.

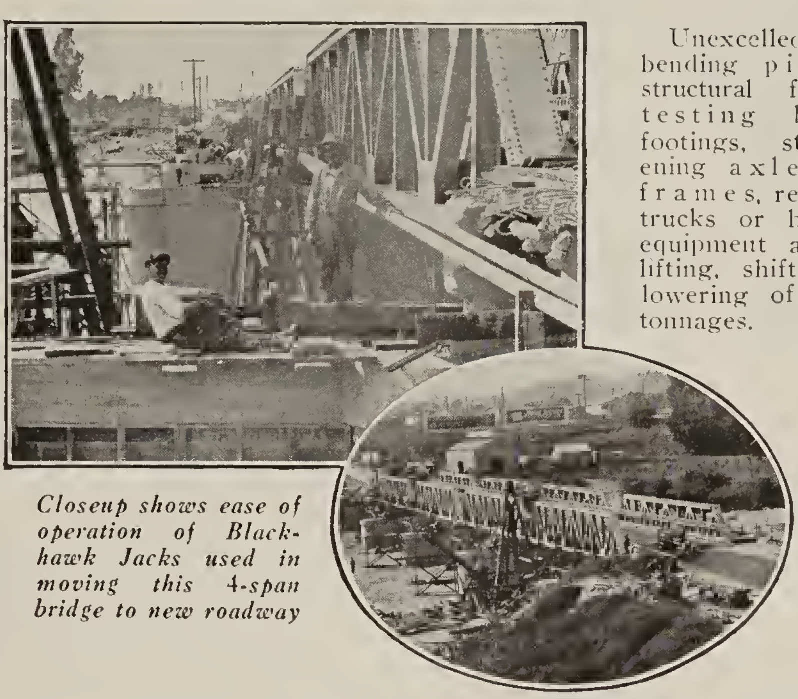


Features of Simplicity

The "Twin-Chek" unit above — the heart of the jack, is an exclusive Blackhawk feature—patented. Both ball checks are located in this unit below the pump. Easily removed for cleaning if need be, by unscrewing pump. Jacks do not have to be torn down—just a few minutes and the job is complete.

BLACKHAWK HYDRAULIC OIL-POWER JACKS and POWER UNITS

Hydraulic Power Units Employed in Countless Industrial Uses



Closeup shows ease of operation of Blackhawk Jacks used in moving this 4-span bridge to new roadway

Unexcelled for bending pipe or structural forms, testing building footings, straightening axles and frames, repairing trucks or heavy equipment and all lifting, shifting or lowering of vast tonnages.

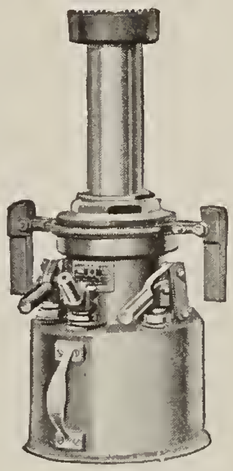
This 2,093 ton bridge was to be moved 15 feet to new roadway without interrupting traffic. Eight 100 ton mechanical jacks in three days moved the bridge thirteen inches. They were discarded for eight 30 ton Blackhawk Hydraulic Jacks and in twelve hours the job was moved the remaining fourteen feet. Comparisons of portability, ease, safety and economy of operation are startling.

HIGH LIFT JACKS

Ideal for lifting and shifting of vast loads. Designed for steam and electric railways, factories, mines, mills, oil fields and other industrial uses. Speed pump extends ram quickly to point of contact, power pump lifts or shifts load. Standard one piece handle, 20″ long.

Cap. Tons	Model	Height	Lift	Net Weight	Price
13	E14	14″	7⅝″	60¼ lbs.	$85.00
18	E27	27″	20½″	93½ lbs.	110.00
30	F14	14″	7⅝″	78½ lbs.	120.00
30	F27	27″	20″	117½ lbs.	150.00

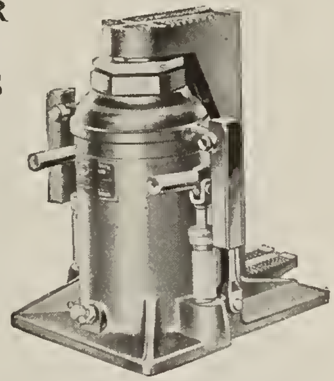
EXTRA HEAVI-LIFT JACKS



For huge presses, locomotive work, extra-heavy erecting and on thousands of jobs requiring portable power embodying ease, speed, safety and economy. Has high and low pressure pumps for speed and power. Standard one piece handle, 20″ long.

Cap. Tons	Model	Height	Lift	Net Weight	Price
50	G18	18″	10″	225 lbs.	$250.00
75	K18	18″	9″	283 lbs.	300.00

FLOOR LIFT JACKS



Double purpose jack—lifts 12 tons from 2″ off the floor on the toe and 20 tons from top of ram. For heavy construction, loading and unloading, moving of cranes, heavy machinery, safes, etc., for power house installation and practically all industrial fields. Has standard one piece handle, 20″ long.

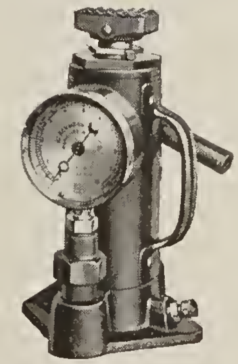
Cap. Tons	Model	Height	Lift	Net Weight	Price
12-20	H-14	14½″	7¾″	132 lbs.	$110.00

HEAVI-LIFT JACKS

Tremendous, smooth power, easily controlled, compact, portable, safe and powerful—unfailing and unbreakable. Controllable to thousandth of an inch. Capacities rated at what one man can handle with ease. Standard one piece handle, 20″ long.

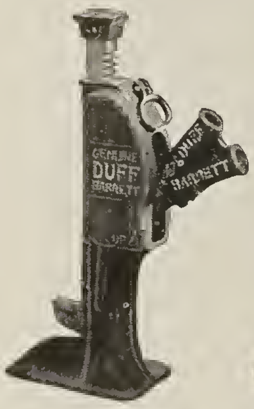
Cap. Tons	Model	Height	Lift	Net Weight	Price
18	F11	11″	5¼″	41 lbs.	$60.00
30	F11	11″	5″	52½ lbs.	90.00

GAUGE-EQUIPPED JACKS



Most Blackhawk Jacks may be gauge-equipped for use by Highway Commissioners, Heavy Duty Tire Stations, Laboratories and Industrial Plants. Gauges from 4½″ to 12″ diameter to read either "total load in tons" or "pounds per square inch pressure."

Duff (Genuine Barrett) Track and Automatic Lowering Jacks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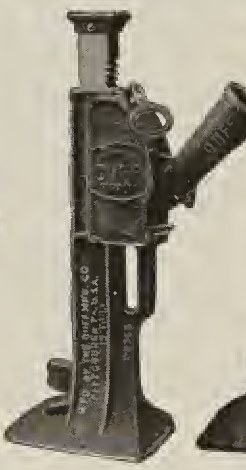
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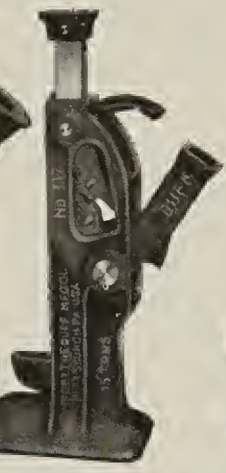
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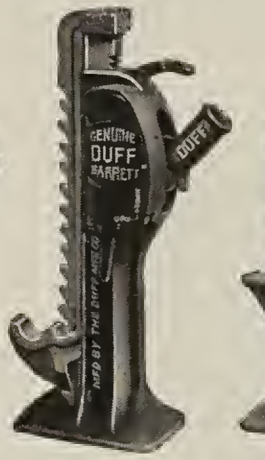
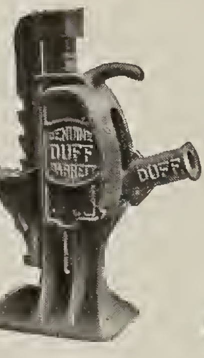
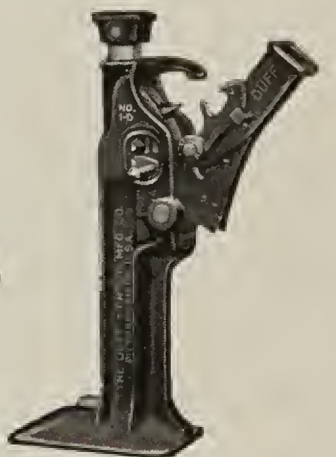

No. 550-CR


No. 513-A


No. 1-D

Duff Genuine Barrett Automatic Lowering Jacks

These sturdy jacks are used for construction, wrecking, bridge building, car work, machinery handling, etc. They are widely used by industrial concerns, telephone and telegraph companies, steam railroads, mines, mills, contractors, truckmen, and others. Duff Automatic Lowering Jacks are single acting, raising on downward stroke only. Duff Automatic Lowering Jacks are unexcelled in safety, low maintenance, and easy and convenient operation.

Square Lever Socket

Round Lever Socket

Double Lever Socket

Jack No.	Supersedes Jack No.	Capacity Tons	Height Inches	Raise Inches	Weight Pounds	Code Word	List Price
*513	..	5	14	6	28	Loek	$15.00
*550	50	5	16	8	32	Luke	16.00
*551	51	5	21	13	40	Leak	18.00
‡518	2	10	22	12	63	Rand	25.00†
‡539	4	15	22	11	78	Fury	38.00†
‡519	19, 119, and 219	15	28	17	96	Flirt	40.00†

*Furnished with round socket lever and 3-foot steel operating bar.

‡Furnished with round socket lever and wood handle or with double socket lever and 4-foot steel operating bar if ordered.

†Deduct $1.00 from list prices if square socket lever is desired.

Nos. 513-A, 550-A and 551-A have the **New Duff Adjustable Footlift** which simplifies "spotting" and increases efficiency, making them more practical for low loads by increasing the footlift strength. The 550-A and 551-A are particularly useful for mine work; 513-A is especially recommended for motor truck work because of its low height.

Nos. 513-CR, 550-CR and 551-CR are equipped with the **New Duff Adjustable Cable Reel Lift** incorporating a steel hook which can be placed anywhere on the rack. It is thus enabled to pick up reels of different diameters at any height with the least amount of adjustment. These jacks, thus equipped, are widely used in pairs by telephone and telegraph companies for supporting the ends of the bar which supports the cable reel.

Jack No.	Capacity Tons	Height Inches	Raise Inches	Weight Pounds	List Price
*513-A	5	14	6	28	$19.00†
*550-A	5	16	8	34	20.00†
*551-A	5	21	13	40	22.00†
*513-CR	5	14	6	28	19.00†
*550-CR	5	16	8	34	20.00†
*551-CR	5	21	13	40	22.00†

*Furnished with round lever socket and 3-ft. steel operating lever.

†Furnished with new Duff Adjustable Foot Lift (A); with new Duff Adjustable Cable Reel Lift (CR).

Duff Genuine Barrett Trip or Track Jacks

Single Acting

The Duff Genuine Barrett trip or track jacks listed below are of the suspended pawl type, which eliminates the use of a separate tripping device, the end of the lower or short pawl serving as such. The suspended pawl design successfully overcomes the tendency (observed in other jacks of this type) of the pawl to jump out of its bearings. The base and socket lever are so reinforced at points of greatest strain, as to make the jack practically unbreakable. It is single acting, i. e., load is raised on down stroke only.

These trip jacks are intended for track work only, as they cannot be lowered gradually except by "fingering down."

Duff Track Jacks are safe and strong, and upkeep is lower than on any other make of jack on the market.

Jack No.	Capacity Tons	Height Inches	Raise Inches	* Weight Pounds	Code Word		List Price
					With Round Socket Lever	With Square Socket Lever	
117	15	22	13	60	Disev	Disqu	$21.00†
217	15	16½	7½	52	Disat	Disom	19.00†
317	15	10	5	32		Disse	19.00†
617	15	23	19	75	Disix	Disxo	27.00†

*Weight of wood handle 5 pounds additional.

†List price covers square socket lever to fit lining bar. Add $1.00 to list if round socket lever and wood handle is desired.

Genuine Barrett Track Jacks and Combination Trip and Lowering Jacks

Double Acting

These strong trip jacks are light, easy to operate and their maintenance is negligible.

No. 1-D is a Trip Jack with hook trip. Its action is quick and positive. An unusually popular Track Jack.

Nos. 1-A and 6-A have the regular trip—an exceedingly simple device which assures safe, quick, easy tripping. The trip is out of the way where it cannot be lost or knocked off.

No. 110 is a combination Trip and Automatic Lowering Jack and can either be tripped or, by pushing reversing lever up, can be lowered notch by notch.

The operating mechanism of Nos. 1-A and 6-A jacks is identical, so that pawls, trip, socket lever, and fulcrum pins are interchangeable.

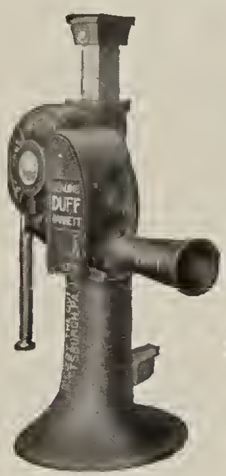
Jack No.	Supersedes Jack No.	Capacity Tons	Height Inches	Raise Inches	Weight Pounds	Code Word		List Price
						With Round Socket Lever	With Square Socket Lever	
1-D*	1	15	22	13	60	Zacna	Zacor	$21.00
1-A*	1	15	22	13	58	Disc	Dart	21.00†
6-A*	6	15	23	19	73	Dosix	Dosqu	27.00†
110‡	10	15	22	13	59	Dally	Dike	24.00†

*Double-acting, raising on both the upward and downward stroke.

‡Double-acting, and fitted with simple automatic lowering device.

†List prices shown cover square socket lever to fit lining bar. Add $1.00 to list if round socket lever and wood handle are desired. Weight of wood handle, 5 pounds.

Duff (Genuine Barrett) Jacks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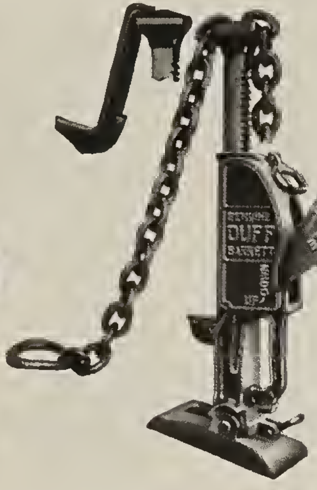
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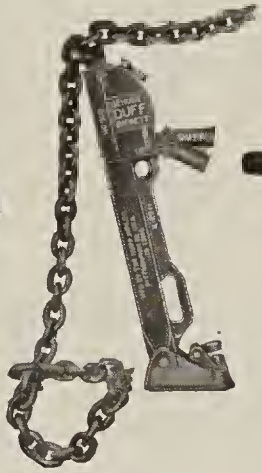
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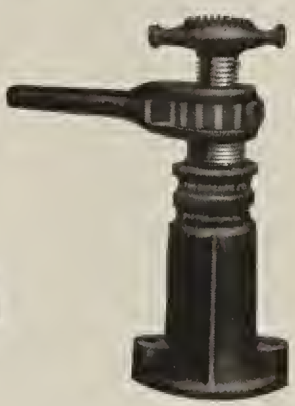
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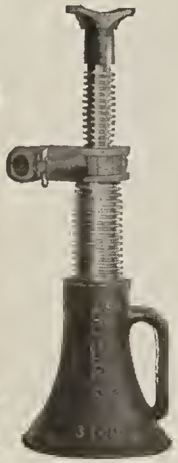
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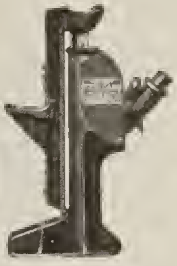

No. 08 and 09

Duff Barrett Geared Automatic Lowering Jacks

These Jacks are single acting (raising and lowering load on down stroke of lever only) and the leverage is compounded by gears so that heavy loads may be lifted with ease. No. 29-A has foot lift. No. 29-B has no foot-lift. Considerable reduction of weight has been obtained by refinement of design.

The gears are machine cut and heat treated, as are all other moving parts, resulting in quick, easy, and positive action. There are no intricate parts to wear out or break. The high class materials used in their construction afford the lightest possible weight for jacks as powerful as these and still assure a wide margin of safety. Convenient for the rapid handling of heavy loads of any character.

Jack No.	Supersedes Jack No.	Capacity in Tons	Height Bar Down Inches	Raise of Bar Inches	Weight With Lever	Code Word	List Price
29-A	29	25	27¾	15¼	159	**Stani**	**$110.00**
29-B	29	25	27¾	15¼	150	**Staro**	**100.00**

Duff Barrett General Purpose Jacks and Pole Jacks

Exceptionally useful and dependable general purpose Jacks for rough and ready service. Sturdily built, but extremely light in weight for capacity. Conveniently handled and spotted, and easily operated by one man.

Four methods of application are possible with Nos. 510 and 540: (1) straight lifting, load applied on head; (2) with chain; (3) with claw; (4) with foot-lift.

Double socket-lever aids effective operation in close and cramped quarters.

No. 500, the Duff Pole Jack, is recommended for pulling, straightening, or moving poles of all sorts—telephone, telegraph, trolley, electric light and power, etc; no matter what size, weight, or depth in the ground, and without digging around the stump.

Jack No.	Cap. Tons	Height Inches	Raise Inches	Weight Pounds	Code Word	LIST PRICE			
						Complete	With Claw Only	With Chain Only	Without Chain & Claw
*540	15	22⅞	12	70	**Zaahs**	**$48.00**	**$42.50**	**$43.50**	**$38.00**
*510	10	22	12	62	**Zacpe**	**35.00**	**29.50**	**30.50**	**25.00**
*500	15	37½	23	116	**Polej**	**70.00**			

*With No. 540 and No. 510 steel operating lever, chain and claw are furnished when purchased complete. With No. 500 steel operating lever and chain are furnished.

Duff Telescope Screw Jacks

Note the very high raise of these jacks—almost as great as the height of the jacks themselves when closed. They have still another advantage over the ordinary screw jacks, in that the load can be raised much more rapidly and the jacks can be used in close quarters because of the ratchet and lever construction.

These jacks are used for bridge work, concrete form work, steel car repairing; and by contractors for general construction work.

Jack No.	Capacity Tons	Height Closed Inches	Raise Inches	Diam. of Base Inches	Weight Pounds	Code Word	List Price
T-11	15	8	7	7⅛	37	**Iago**	**$22.00**
T-12	15	10	9	7¾	42	**Ibis**	**25.00**
T-13	20	13	14	8	62	**Icho**	**30.00**
T-14	25	16	18	8⅜	75	**Idol**	**34.00**
T-15	30	16	17	8⅜	85	**Ieng**	**40.00**
T-16	40	19	22	9⅞	127	**Ifat**	**45.00**

Duff Motor Truck Jacks

Telescope Screw Type

These strong telescope screw jacks are particularly useful for trucks equipped with pneumatic tires, and for any lifting work within their capacities where a low height jack with a high raise is required. Note that the raise of the screws in these jacks is equal or over the height of the jacks themselves.

Jack No.	Capacity Tons	Closed Height Inches	Raise Inches	Open Height Inches	Weight with Lever Pounds	Code Word	List Price
5100	3	9½	10	19½	20	**Zaben**	On Application
5150	5	7½	7½	15	17½	**Zabip**	
5160	5	8¾	9¼	18	19½	**Zabma**	

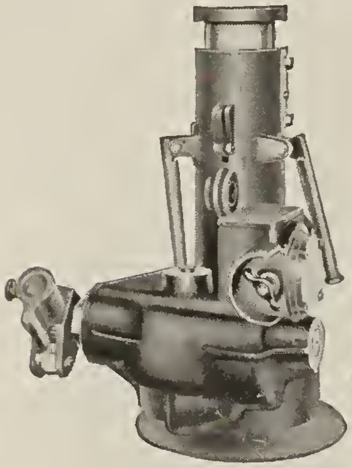
Duff Auto and Truck Jacks

Duff motor car and truck jacks meet, at a very moderate price, all requirements as to lifting capacity and different axle heights of the great majority of passenger cars and trucks. They are light and sturdy. All parts are heat-treated where necessary, and are accurately machined and carefully fitted together. All these jacks are furnished with steel levers.

The 1-ton capacity jacks are designed with a foot-lift which can be adjusted to any height desired, as will be noted in the illustration of jack No. 08. The 3,- 5- and 10-ton jacks are primarily intended for trucks and garage use.

Jack No.	Capacity in Tons	Height Inches	Raise Inches	Foot Lift Adjustment		Weight with Lever Lbs.	Code Word	List Price
				Lowest	Highest			
08	1	11¾	6¾	4½"	11½"*	11¼	**Mecca**	On Application
09	1	9¾	5	4½"	9¾"*	10	**Mesin**	
100	3	11	6	...	....	17½	**Comet**	
200	5	13	6¾	...	....	30	**Autojax**	
305	10	14	6¼	...	....	40	**Otto**	

Duff-Norton Jacks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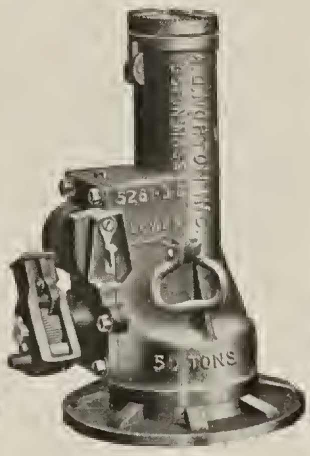

No. 5261-BB

No. 2825

No. C-35

No. B-5024

No. 2511

Norton Self-Lowering Speed-Controlled Jacks

These models represent the very latest development in modern heavy duty Lifting Jacks and combine only those features that have fully stood the test of severe usage over many years' time.

The standard is semi-keyed, permitting it to be quickly turned up or down by hand, but to be rigidly held during operation. Lubrication of all parts is automatic, insuring long life and ease of operation. The extra high rise is a distinct advantage on certain classes of work.

Used for lifting locomotives, heavily loaded cars and all purposes where small head with heavy lifting capacity is required.

Jack No.	Capacity Tons	Height Inches	Raise Inches	Diam. of Base Inches	Weight Pounds	Code Word	List Price
2261 BB	25	26	14	12	155	**Ink**	$125.00
2301 BB	25	30	18⅜	12	168	**Iberia**	125.00
3261BB	35	26	13¾	12	190	**Income**	150.00
3301 BB	35	30	17½	12	195	**Ice**	160.00
5241 BB	50	24	12	14	257	**Idol**	210.00
5261 BB	50	26	14	14	266	**Ivy**	210.00
5301 BB	50	30	18	14	280	**Impel**	230.00
5361 BB	50	36	24	14	310	**Iris**	250.00
7203 C	75	20	8	14	315	**Caddy**	285.00
7243 C	75	24	12	14	335	**Cage**	285.00
7263 C	75	26	14	14	347	**Cater**	285.00
1203 C	100	20	7½	14	325	**Cold**	305.00
1243 C	100	24	11½	14	342	**Coke**	305.00
1263 C	100	26	13½	14	358	**Concur**	305.00

Duff Self-Lowering Jacks Governor Controlled

Duff Governor Controlled Jacks are safe, positive acting, reliable, and most economical—especially where daily heavy duty is a continuous service demand.

The small head is a distinct advantage. It can be applied in congested places where otherwise the use of jacks with larger heads would be impossible. The small head also prevents applying eccentric loads which cause great strain on working parts and might cause a jack to stick when lowering.

Reduction gears in the governor controlled train are, with few exceptions, interchangeable in all types or tonnages. Rugged construction and accurate workmanship provide greatest economical service.

Jack No.	Capacity Tons	Height Inches	Raise Inches	Weight Pounds	Code Word	List Price
2820	20	28	15¼	130	**Govma**	$100.00
2825	25	28	15¾	181	**Govet**	125.00
2635	35	26	13¾	185	**Govbl**	150.00
2835	35	28	15¾	190	**Govga**	155.00
2650	50	26	13½	230	**Govho**	210.00
2850	50	28	15½	240	**Govte**	220.00
3050	50	30	17½	250	**Govik**	230.00
3650	50	36	23½	270	**Govlu**	250.00
2075	75	20	6	330	**Govre**	285.00
2475	75	24	10	345	**Govop**	285.00
2675	75	26	12	360	**Govmi**	285.00
20100	100	20	6	330	**Govse**	305.00
24100	100	24	10	345	**Govos**	305.00
26100	100	26	12	360	**Govta**	305.00

Norton Ball-Bearing Locomotive and General Purpose Jacks

These jacks are very useful for heavy work of any character, including bridge work, car repairing, and the handling of heavy structural material. Especially suitable for rough outdoor usage, all working parts being of sturdy design.

Each jack is designed with carrying handles, one on each side of the jack, and is furnished with a steel operating bar.

Jack No.	Capacity Tons	Height Inches	Raise Inches	Size of Base Inches	Weight Pounds	Code Word	List Price
B 1522	15	22	10	7½x7½	105	**Abyss**	$ 60.00
*F	15	24	12	8x 9	128	**Fruit**	65.00
B 2522	25	22	10¼	8x 9¾	140	**Adjust**	90.00
B 2526	25	26	14⅜	8x 9¾	157	**Atlas**	96.00
B 3522	35	22	10⅝	9x10½	171	**Absent**	130.00
B 3526	35	26	14	9x10½	201	**Amber**	138.00
B 5024	50	24	9⅝	14	266	**Alto**	150.00
B 5027	50	27	13⅜	14	298	**Anchor**	150.00
93	75	27	11⅜	14	329	**Absurd**	200.00
99	100	27	12	14	375	**Almond**	300.00
G. B.	15	22	9½	10	98	**Eaton**	69.00
NA 20	25	20	8	12	133	**Canon**	80.00
NA 26	25	26	14	12	164	**Celery**	90.00
No. 100	35	20	8½	14	160	**Clay**	125.00
C35	35	23	13	12	175	**Clio**	125.00

Duff Journal Jacks

Low Height Ball Bearing Screw Jacks

Designed for lifting and adjusting low-set loads, tanks, structural material, etc. The built-in positive stop feature in these jacks prevents raising standard out of base. These jacks combine unusually light weight with ample strength for their rated capacities. The interiors of these jacks are packed with semi-fluid grease in which all moving parts revolve. A key in the standard prevents rotation of the jack under load and preserves the alignment of the working parts. Furnished with 3-foot solid steel operating lever with pinch-bar end.

Jack No.	Capacity Tons	Height Inches	Raise Inches	Weight Pounds	Code Word	List Price
111	15	10	5	29	**Oscar**	$25.00
2509	25	9	3½	37	**Orion**	36.00
2510	25	10	4½	38	**Osmun**	36.00
2511	25	11	5½	39	**Orbit**	35.00
3509	35	9	3	47	**Opera**	55.00
3510	35	10	4	50	**Organ**	55.00
3511	35	11	5	52	**Optic**	55.00

Duff (Genuine Barrett) Jacks

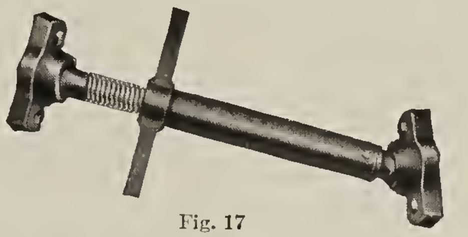


Fig. 17

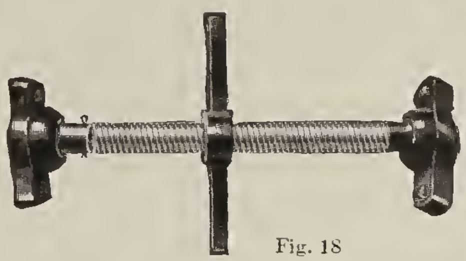


Fig. 18

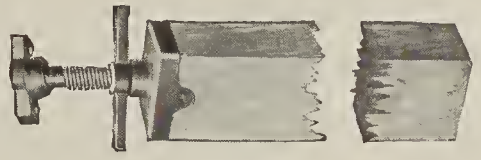


Fig. 19

Duff Trench Braces

(The Original Dunn Brace)

Duff Trench Braces are used throughout the world by modern contractors, intsead of timbers and wedges which are costly, unsafe and dangerous, and which so often cause serious accidents. Duff Braces are quickly installed, easily removed, light and strong, **and adaptable to any width trench** by changing the pipe. They save time and money and can be used year after year. The only Trench Braces made with **Drop Forged Lever Nut—an important safety feature.** Ball and socket joints make Duff Braces adjustable to any angle. See Fig. 17.

Pipe and Screw Diameter Inches	Length of Brace Closed Inches	Length of Screw Inches	Safe Extension of Screw Inches	Weight per Dozen Pounds	List Price per Dozen
*1½	16	10	6	180	$46.00
*1½	18	12	7	200	46.00
*1½	21	14	8	212	48.00
*1½	24	14	8	221	48.00
*1½	27	16	9	240	52.00
*1½	30	16	9	245	52.00
*1½	36	18	10	270	54.00
*1½	42	18	10	300	56.00
*1½	48	18	10	325	58.00
2	36	18	10	538	102.00
2	42	18	10	564	104.00
2	48	18	10	580	106.00
2	54	18	10	608	108.00
2	60	18	10	630	110.00

*Drop forged lever nut with these sizes only.

Duff Screw Fitting for Timber Braces

(Fig. 19)

Diameter of Screw Inches	Length of Screw Inches	Size of Cap or Washer Plate Inches	Weight per Dozen Pounds	List Price per Dozen Sets	Timber Caps per Dozen
1½	14	4 x 4	162	$47.00	$15.00
1½	14	6 x 6	192	52.00	20.00
1½	18	6 x 6	204	56.00	20.00
2	18	6 x 6	378	86.00	20.00
2	18	8 x 8	414	96.00	30.00

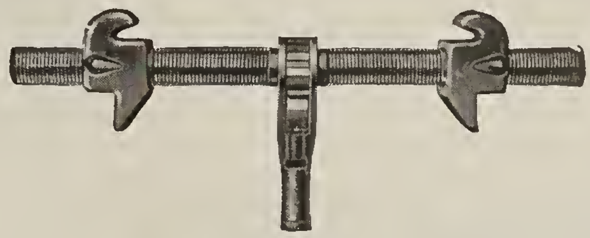


Fig. 20

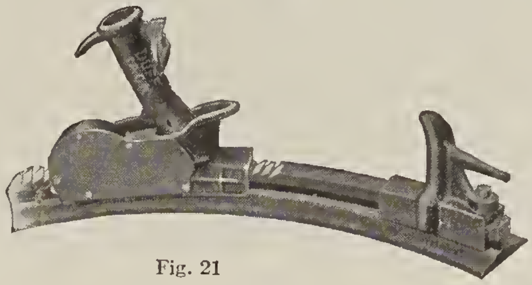


Fig. 21

Duff Extensible Steel Trench Brace Fittings

(A piece of standard pipe, cut to length desired, is all that is required to complete the Brace.) Fig. 18.

Diameter of Screw Inches	Length of Screw Inches	Safe Extension of Screw Inches	Weight per Dozen Pounds	List Price Complete per Dozen	List Price Screw Ends Only per Dozen
1½	12	7	185	$40.00	$30.00
1½	14	8	192	42.00	32.00
1½	16	9	204	44.00	34.00
1½	18	10	208	46.00	36.00
2	18	10	440	90.00	66.00

List Price Socket Butts $10.00 per Doz. for 1½″ sizes.
List Price Socket Butts 24.00 per Doz. for 2″ sizes.

Duff Push and Pull Jack

Duff Jack No. 1029 is designed for pushing apart or pulling together structural members, walls, machinery, and equipment of different characters. With chains and hooks its range of application is greatly increased. See Fig. 20.

Jack No.	Capacity Tons	Pulling		Pushing		Weight Pounds	List Price with Handle
		Mx.	Mn.	Mx.	Mn.		
1029	10	25″	9½″	24″	8½″	50	$25.00
1533	15	34″	8″	30″	5″	97	36.00

Duff Oil Well Jacks

Designed for wrenching and unwrenching oil well tools. They are universally known in the oil fields. Operating action is quick and positive. They are strong and rugged. In design and operation, they embody all the improved and time-tested Duff features. All operating parts can be readily duplicated. Each jack furnished with wood operating lever. See Fig. 21.

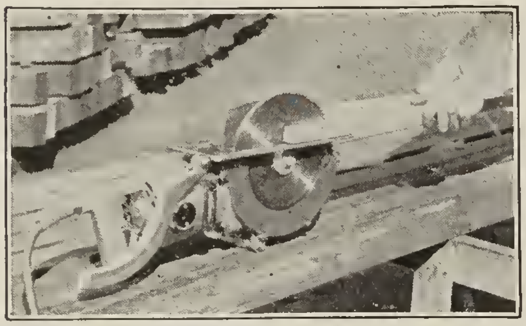
Jack No.	Action	Cap. Tools with Sqs. up to Ins.	Length of Rack	Radius of Rack Inches	Weight Complete Lbs.	List Price
1-OW	Double	4	8′5″	36	194	$65.00
1-SA	Single	4	8′5″	36	190	65.00
2-OW	Double	5	9′0″	42	341	100.00
*202	Double	5	6′0″	..	315	102.00

*The rail or "rack" is straight instead of circular like the Genuine Barrett Circle Jack shown above. Furnished with wood operating lever.

SKILSAW
THE ORIGINAL ELECTRIC HAND SAW

Cut a stair stringer of 16 steps out of 2" lumber complete in twelve minutes with Skilsaw. It saves as much time on other operations too.

Trim a door fast, accurately and so neatly you won't need to put a plane to any edge. Skilsaw with a mitre blade will do it.



Turn Skilsaw upside down on a bench and you've got one of the fastest cutting and most powerful table saws you'll ever need.

Gang the work for Skilsaw and you'll make concrete forms in half the time because Skilsaw goes to the work, anywhere — you don't have to carry the lumber to Skilsaw.

In tight places where handsawing is inconvenient and slow let Skilsaw do the work. It then becomes a fast, easy job.

THE usefulness of Skilsaw does not end with sawing wood. By substituting an abrasive disc for the regular saw blade, such materials as limestone, marble, brick, slate, asbestos and terra cotta can be cut to fit, right on the job, with Skilsaw.

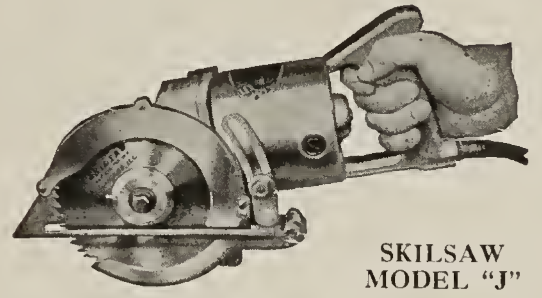
Instead of pecking away at a block of stone with a hammer and chisel, simply score the top and one side surface with a Skilsaw, tap the block with a hammer and you will get a clean, even break in less time, with less labor.

A beautiful stairway job in tile can be made by cutting the angle ends of the courses for the top course with Skilsaw. The edges will be smooth and straight, no tile will be broken and the work will be done three times as fast. One contractor estimated that Skilsaw saved him several hundreds of dollars on one job of 14,000 tile.

With an abrasive blade, Skilsaw can be used to cut sills, chimney caps, trims, and even arches. One firm uses Skilsaw to cut lead pipe. Another finds it handy to cut light steel frames. One prominent contractor says, "We can use Skilsaw from basement to roof. We start by cutting the maple lagging for the caisson and end by cutting the baseboard and trim."

You will find this many-purpose, high-speed tool a time-saver and labor-saver on every job. It really pays for itself by cutting construction costs.

SKILSAW
THE ORIGINAL ELECTRIC HAND SAW



SKILSAW
MODEL "J"

SPECIFICATIONS

Cutting Capacity (maximum)	1⅞″ deep
Diameter of Saw Blade	6″
Weight	11 lbs.
Price—110 Volts	$60.00

Recommendation: Model "J" is recommended for cross-cutting up to 2″ dressed lumber or ripping lumber not heavier than 1″ rough

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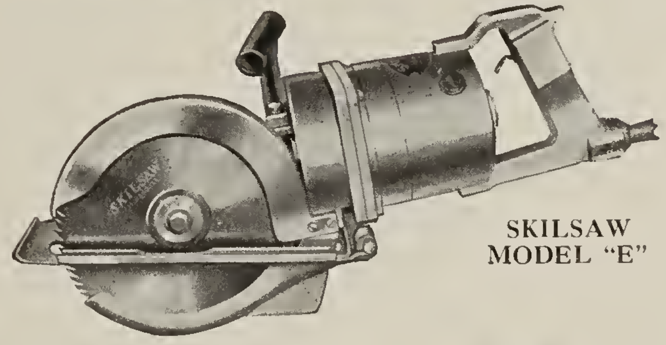
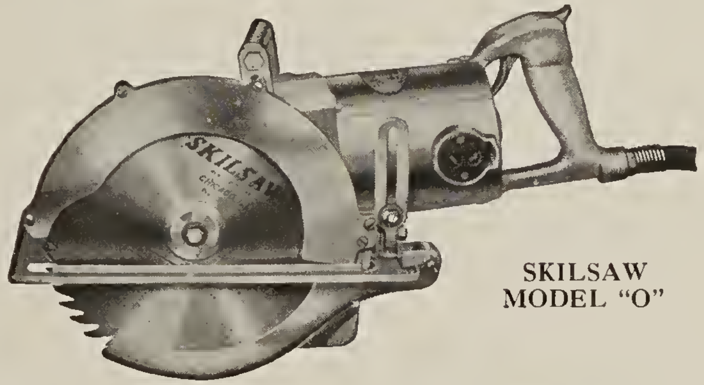


SKILSAW
MODEL "E"

SPECIFICATIONS

Cutting Capacity (maximum)	2¾″ deep
Diameter of Saw Blade	8″
Weight	18 lbs.
Price—110 Volts	$135.00

Recommendation: Model "E" is recommended for cross-cutting up to 3″ dressed lumber or ripping lumber not heavier than 2″ dressed.

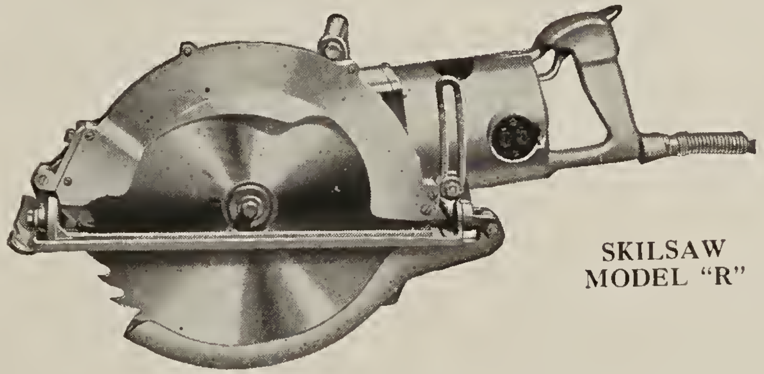


SKILSAW
MODEL "O"

SPECIFICATIONS

Cutting Capacity (maximum)	3¾″ deep
Diameter of Saw Blade	10″
Weight	25 lbs.
Price—110 Volts	$160.00

Recommendation: Model "O" is recommended for cross-cutting up to 4″ dressed lumber or ripping lumber not heavier than 3″ dressed.



SKILSAW
MODEL "R"

SPECIFICATIONS

Cutting Capacity (maximum)	4⅝″ deep
Diameter of Saw Blade	12″
Weight	34 lbs.
Price—110 Volts	$195.00

Recommendation: Model "R" is recommended for cross-cutting up to 4″ rough lumber or ripping lumber not heavier than 4″ dressed.

All SKILSAW motors are universal, operating equally well on D.C. or A.C. These motors are especially designed to furnish ample power for work within the designated capacity of each model. They can be supplied for 110 volts or for 220 or other voltages. Bases are vertically adjustable for depth of cut, and (except Model "J") tilt for bevel cuts.

Full size approved apron guard insures complete protection to the operator. Switches are two pole momentary type. (Approval Underwriter's Laboratories.) High grade rubber insulated cords have integral ground wires and lamp socket connection. Standard equipment includes one combination rip and cutoff blade, wrench and grease gun, all in a compact and convenient permanent carrying case.

All prices shown are F.O.B. Chicago.
Skilsaws for 220 volts or special voltages can be furnished at additional charge.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

“Van Dorn” PORTABLE ELECTRIC DRILLS

Light-Duty ¼-Inch Electric Drill

An inexpensive drill, designed to do the many little jobs that do not require a heavy-duty tool. Automotive shops, electricians, plumbers, carpenters, mechanics, repairmen—in fact, every man who uses tools—needs such a drill for intermittent service every day. Being light and compact it is the ideal drill for the tool kit. It is not intended for continuous production drilling—but is a strong, general-purpose drill. Every shop can afford to have one of these drills for odd jobs, releasing the heavy-duty tools for their regular work.

Specifications

Speed—No load, 2,000 R. P. M.; Full load, 1,200 R. P. M.

Drilling Capacity—¼″ in steel; ½″ in wood.

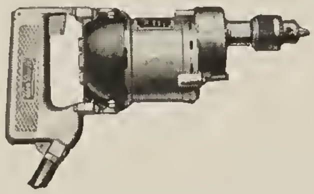
Equipment—3-jaw Chuck, Switch, 10-ft. Cable and Plug.

Weight—5 lbs.

Length—10½″.

Code No. D-1100—Price...................... **$25.00**

Heavy-Duty ¼-Inch Drill



The latest development in a Heavy Duty ¼″ Electric Drill. Light in weight, more powerful than previous models. Adapted for speedy, continuous production drilling—also for driving Valve Seat Hones, Carbon Cleaning Brushes, Valve Guide Cleaners, Wire Brushes and other attachments used daily in Service Stations.

Specifications

Speed—No load, 2,000 R. P. M.; Full load, 1,200 R. P. M.

Drilling Capacity—¼″ in steel.

Equipment—3-jaw chuck; 10 ft. electric cable with plug.

Weight—5⅓ pounds.

Shipping Weight—7½ pounds.

Code No. D8100—Price...................... **$36.00**

5/16-Inch Electric Drill

Exceptional power and long life make this a most desirable tool for 5/16″ production drilling in either metal or wood. It is definitely designed for Service Stations, Body and Fender Repair Shops for handling the many hole sizes above the capacity of a ¼″ drill.

Specifications

Speed—1,500 R. P. M., no load; 900 R. P. M. full load; also furnished at 2,000 R. P. M., no load. (Specify No. 8200.)

Drilling Capacity—5/16″ in steel.

Weight—7 pounds.

Shipping Weight—10½ pounds.

Equipment—3-jaw chuck; 10 ft. electric cable with plug.

Code No. 8500—Price...................... **$47.00**

½-Inch Electric Drill

This ½″ Electric Drill is designed and built particularly for maintenance work in service stations, factories and machine shops. In power, weight and speed it is ideal for millwright, plumber, electrician and general repairman.

Specifications

Speed—540 R. P. M., no load; 300 R. P. M., full load.

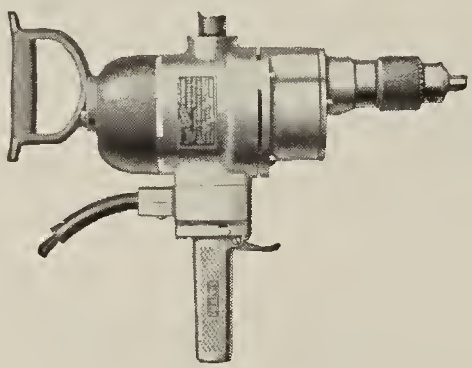
Drilling Capacity—½″ in steel.

Weight—15 pounds.

Shipping Weight—19 pounds.

Equipment—Combination spade handle and breast plate, 3-jaw chuck and 10 ft. electric cable with plug.

Code No. 8600—Price...................... **$45.00**



⅝-Inch Electric Drill

Designed and built to handle the heaviest continuous ⅝″ production work, it is also adapted for automotive maintenance and millwright work.

Specifications

Speed—550 R. P. M., no load; 315 R. P. M. full load.

Drilling Capacity—⅝″ in steel.

Weight—17½ pounds.

Shipping Weight—19½ pounds.

Equipment—Combination spade handle and breast plate, 3-jaw chuck, 10 ft. electric cable with plug.

Code No. D-700—Price...................... **$68.00**

¾-Inch Electric Drill

The rugged construction and power of this heavy duty drill adapt it for general building construction work, machinery erection and general automotive maintenance work. Because of its great reserve power, this drill is recommended to service stations for driving rigid set cylinder grinders and hones, and for truck repairs.

Specifications

Speed—375 R. P. M., no load; 185 R. P. M., full load.

Drilling Capacity—¾″ in steel.

Weight—24½ pounds.

Shipping Weight—27 pounds.

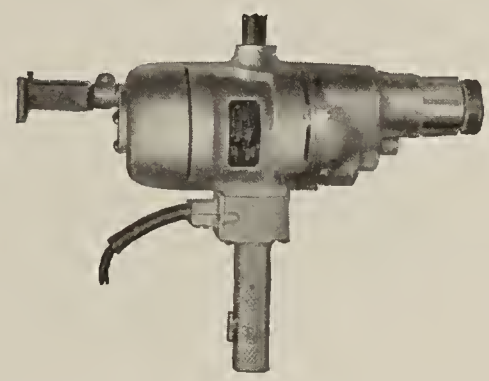
Equipment—Combination spade and breast plate swivel handle, 3 jaw chuck, 10 ft. electric cable and plug.

Code No. D-900—Price...................... **$78.00**

Universal Motors Operate on Direct or Alternating Current. Furnished for 32, 110, 220 or 250 Volts.

"Van Dorn" PORTABLE ELECTRIC TOOLS

1-Inch Electric Drill



This machine is particularly useful for outside construction work, for repairs on railway cars; shipbuilding and ship repairs; dock construction and timber work around the mines;—especially where deep wood boring is necessary.

Specifications

Speed—375 R. P. M., no load; 185 R. P. M., full load.

Drilling Capacity—1¼″ in steel.

Weight—26 pounds.

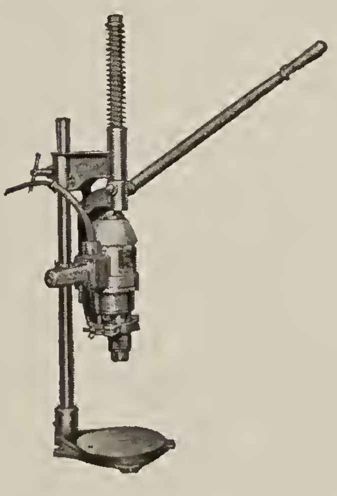
Shipping Weight—30 pounds.

Equipment—Spade Handle; No. 3 Morse Taper Socket; 20 feet of cable. Following equipment can be furnished extra if desired: Feed Screw; ⅝″ Chuck with Special No. 3 Morse Taper Adaptor.

No. D-1000—Price.......................... **$98.00**

Bench Drill Stand for ½-Inch Drill Only

Code No. DS-500—Price..................... **$18.00**



Weight—54 lbs.

A 5 to 1 leverage of feed handle will give approximately 1,000 lbs. pressure speeding up drilling operations.

Bench Drill Stand

For ⅜″, ½″, ⅝″, ¾″, ⅞″ Drills

Code No. 1295—Price....................... **$28.00**

Weight—56 pounds.

Post Drill Stand

For ⅜″, ½″, ⅝″, ¾″, ⅞″ Drills

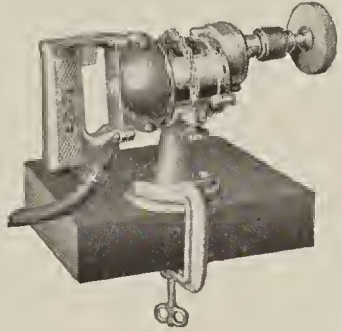
Code No. 1250—Price....................... **$32.00**

Provided with brackets for column or wall mounting.

Weight—65 pounds.

Bench Stand for ¼-Inch Drill

This handy bench stand converts the ¼″ drill into a stationary unit for grinding, buffing and similar operations. A Grinding Wheel and Arbor are also furnished for light grinding jobs. The complete set of Stand, Grinding Wheel, Clamp and Arbor comprises Set No. 8160A. Can also be used with wire brush for cleaning valves and other buffing.

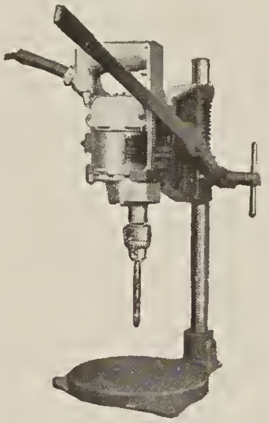


No. 8160 — Stand, Grinding Wheel and Arbor. Price...... **$3.00**

No. 8169—Stand only. Price........... **$1.50**

No. 8131—Clamp to hold Stand on Bench. Price........... **$1.50**

Bench Drill Stand for ¼-Inch Drill



Drill is easily mounted and held in place by a Clamp and Hand Screw. Movable carriage with tension spring holds drill up in idle position. Drills Nos. 8100, 8500; Screwdrivers Nos. 1 and 2 and Tapper No. 2 can be mounted in this stand.

Weight (Stand only)—14 lbs.

Shipping Weight—22 lbs.

Code No. A-1375—Price. **$12.00**

No. 1 Electric Tool Kit

Code No. 1—Price.......................... **$40.00**

To carry tools to the work for drilling, grinding, buffing, brushing and reaming.

1—D-1100 ¼″ Drill
1—8169 Drill Stand
1—8131 Clamp for Stand
1—3-section Stitched Buff
1—704 Wire Wheel Brush
1—6255 Grinding Wheel
2—8148 Arbors
11—Twist Drills, No. 56 Set
1—68 Rotary Wire Brush
1—Rotary File
1—Sand Paper Disc
1—Buffing Compound

Complete with Metal Kit

No. 5 Electric Tool Kit

Code No. 5—Price.......................... **$67.00**

For electricians, plumbers and carpenters to do almost any drilling or hole-cutting job.

1—8600 ½″ Drill

1—GTD-233 Burring Reamer

4—Wood Augers, Nos. 24-20-16-12. Give size required.

5—Twist Drills, ½, 7/16, ⅜, 5/16, ¼.

7—Hole Saws, 3″, 2½″, 2¼″, 2″, 1¾″, 1½″, 1⅜″.

1—Hole Saw Mandrel, HS-904.

Complete with Metal Kit.

“Van Dorn” ELECTRIC GRINDERS

Hole Saws

Especially useful in Service Stations for cutting holes in instrument boards and floor boards —in plumbing and heating work for cutting holes in soil pipes, tanks, furnaces, boilers, radiators, bath fixtures, sinks, etc. Electrical Work for cutting holes in conduit boxes, etc., and aircraft work for installing instruments.

Hole Saw Sets

No.		Price
HS901	Automotive Set, one each ¾″, 2″, 2 1/16″, 2⅝″ and 3½″ Saws, two Mandrels........................	**$7.50**
HS902	Plumbers and Steamfitters Set; one Saw each for ¾″, 1″, 1¼″, 1½″ and 2″ Pipe Taps; two Mandrels......	**6.50**
HS900	Electricians Set; 1 each ¾″, ⅞″, 1⅛″, 1⅜″, 1¾″, 2″, 2½″ and 3″ Saws; two Mandrels..................	**9.50**
HS905	Aircraft Set; 1 each 2¼″, 2¾″, 2⅞″, 3′ and 4″ Saws; one Mandrel..............................	**8.00**

Hole Saws Only (without Mandrels)

Cat. No.	Saw Size	Pipe Tap Size	Conduit Size	Use with Mandrel No.	Price
HS906	¾″	....	⅜″	HS903	**$ .60**
HS908	⅞″	¾″	½″	HS903	**.60**
HS910	1″	....	....	HS903	**.60**
HS912	1⅛″	1″	¾″	HS903	**.60**
HS911	1¼″	....	....	HS904	**.60**
HS913	1⅜″	....	1″	HS904	**.60**
HS914	1½″	1¼″	....	HS904	**.60**
HS915	1⅝″	....	....	HS904	**.90**
HS916	1¾″	1½″	1¼″	HS904	**.90**
HS917	1⅞″	....	....	HS904	**.90**
HS918	2″	....	1½″	HS904	**.90**
HS920	2⅛″	....	....	HS904	**.90**
HS922	2¼″	2″	....	HS904	**.90**
HS921	2⅜″	....	....	HS904	**1.25**
HS923	2½″	....	2″	HS904	**1.25**
HS924	2⅝″	....	....	HS904	**1.25**
HS925	2¾″	....	....	HS904	**1.25**
HS927	2⅞″	....	....	HS904	**1.25**
HS926	3″	....	2½″	HS904	**1.25**
HS930	3⅛″	....	....	HS904	**1.25**
HS929	3¼″	....	....	HS904	**1.25**
HS928	3½″	....	....	HS904	**1.25**
HS932	4″	....	....	HS904	**1.85**

Mandrels

HS903	Mandrel with pilot drill (for ¾″ to 1⅛″ Saws)..........	**$1.50**
HS904	Mandrel with pilot drill (for 1¼″ to 4″ Saws)..........	**1.50**

Wire Wheel Brushes

These brushes are rigid and compact, made of proper gauge wire for each size. By comparison they will be found to have a wider face, more wires and longer life than other brushes.

Four-inch diameter brushes are of the solid hub type. Sizes of 6″ and over are of the adaptor type.

No.	Diam.	Hole	Price	No.	Diam.	Hole	Price
704	4″	½″	**$2.50**	**710**	10″	*	**$7.00**
706	6″	*	**3.50**	**712**	12″	*	**9.00**
708	8″	*	**4.00**				

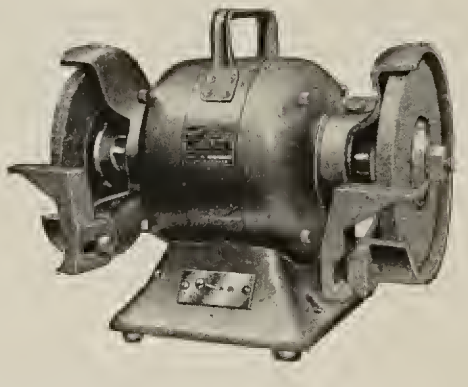
*Arbor hole adaptors furnished for ⅜″, ½″, ⅝″, ¾″, ⅞″, 1″, 1⅛″, 1¼″, 1⅜″, 1½″ and 1¾″. Specify size wanted.

Extra Arbor Hole Adaptors, per pair............. **$0.20**

See Page 7 for Arbors

6-Inch Ball Bearing Bench Grinder

Code No. G-200—Price................................. **$35.00**



Ideal for tool dressing, sharpening hand tools and light grinding of all kinds. Easily portable.

Speed—3600 R. P. M., no load.
Weight—36 pounds.
Current—Supplied for 100 volts, 50-60 cycle A. C.

Furnished for other voltages and types of current at.......... **$46.00**

Pedestal for Mounting 6-Inch Bench Grinder

Code No. G-7060—Price................................. **$12.00**

10-Inch Ball Bearing Bench Grinder

Code No. G-400—Price................................. **$118.00**

For tool grinding and all types of general grinding and buffing work.
Speed—2,000 R. P. M. (D. C.); 1800 R. P. M. (A. C.)
Weight—120 pounds.
Current—Specify voltage and current when ordering.

Pedestal for Mounting 10-Inch Bench Grinder

Code No. G-459—Price................................. **$23.00**

12-Inch Ball Bearing Grinder

BENCH TYPE

Code No. 10800—Price................................. **$208.00**

Speed—1800 R. P. M.
Weight—360 pounds.
Current—3 phase, 60 cycle, 220 or 440 volts.

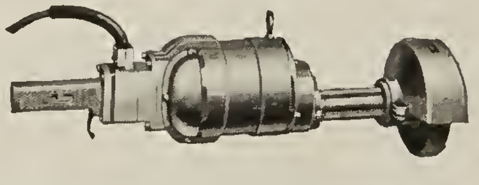
For 25 and 50 cycle current. Price....................... **$220.00**

Floor Type with Pedestal

Code No. 10900—Price................................. **$238.00**
For 25 and 50 cycle current. Price....................... **$250.00**

Universal Motor Aerial Grinders

Will Operate on Alternating or Direct Current



Powerful heavy duty portable Grinders for removing the greatest amount of metal in a given period of time. Light in weight, they are unusually easy to handle and have unlimited application for portable grinding operations. Furnished with “Van Dorn” built motors, ball bearings housed in dust-proof seats, hardened alloy steel gears and automatic safety switches.

Equipment—Wheel, wheel guard and 15 feet of cable with plug.

Specifications

No.	Wheel Size	Weight	Speed (No. Load)	Price	Abrasive Wheel No.
5900	5″x¾″x½″	15 lbs.	4200 R.P.M.	**$70.00**	**5933**
6200	6″x1″x⅝″	22 lbs.	3800 R.P.M.	**90.00**	**6233**

Furnished for 110, 220 and 250 volts

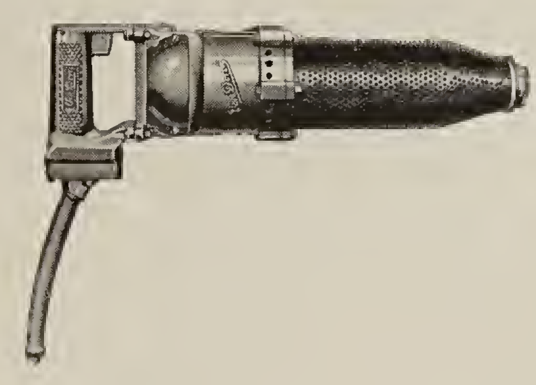
Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

"Van Dorn"

PORTABLE ELECTRIC HAMMERS

No. EH-200, Portable Electric Hammer

Code No. EH-200—Price......................$145.00



Four times as fast as hand method for drilling in concrete or brick for electrical work, sign and awning hanging and theatre seat installation.

Capacity in Concrete or Brick—Up to ⅝″.

Number of Blows per Minute—3300.

Weight—9 pounds.

No. EH-400, Portable Electric Hammer

Code No. EH-400—Price......................$185.00

Eight times as fast as hand method. For driving any type of tool where hammer action is desired.

Capacity in Concrete or Brick—Up to 1⅛″.

Number of Blows per Minute—2300

Weight—15½ pounds.

No. EH-600, Portable Electric Hammer

Code No. EH-600—Price......................$245.00

Twelve times as fast as hand method for drilling in concrete or brick.

Capacity in Concrete or Brick—Up to 1½″.

Number of Blows per Minute—2900.

Weight—23 pounds.

Universal Motors
Operate on Direct or Alternating Current
Furnished for 110 or 220 volts

Electric Hammer Tools

Cat. No.	Size		Price
10651	No. 0	Star Drill Chuck (¼″-¾″ Inc.)—For No. EH200 Hammer only	$3.50
99239	No. 1	Star Drill Chuck (¼″-¾″ Inc.)—For No. EH400 or EH600 Hammers...................	3.50
99243	No. 2	Star Drill Chuck (13/16″-1¼″ Inc.)—For No. EH400 or EH600 Hammers...................	4.50
99420	No. 3	Star Drill Chuck (1⅜″ up)—For No. EH400 or EH600 Hammer	5.50
97155	....	Drift Key..................	.50
99037	....	Wood Gauge..................	6.00
99039	....	Flat Wood Chisel..............	4.00
99041	....	Bush Tool....................	6.00
99035	....	Seam Tool....................	2.75
10909	....	Tool Retaining Spring for No. EH200....................	.25
10337	....	Tool Retaining Spring for No. EH400....................	.25
10336	....	Tool Retaining Spring for No. EH600....................	.25

Star Drills and Diamond Point Drills

Diam.	5″ Long		9″ Long		12″ Long		16″ Long		20″ Long	
	Ea.	In Box of 6 Ea.	Ea.	In Box of 6 Ea.	Ea.	In Box of 6 Ea.	Ea.	In Box of 6 Ea.	Ea.	In Box of 6 Ea.
¼″	1.00	.75	....	....	....	....	....	....	....	....
5/16″	1.00	.75	....	....	....	....	....	....	....	....
⅜″	1.00	.80	....	....	....	....	....	....	....	....
7/16″	1.15	.85	....	....	....	....	....	....	....	....
½″	....	....	1.15	.95	1.50	1.20	2.00	1.60	2.50	2.00
9/16″	....	....	1.15	.95	1.50	1.25	2.00	1.65	2.50	2.05
⅝″	....	....	1.30	1.00	1.75	1.30	2.25	1.70	2.75	2.10
11/16″	....	....	1.30	1.05	1.75	1.35	2.25	1.75	2.75	2.15
¾″	....	....	1.30	1.10	1.75	1.40	2.25	1.80	2.75	2.20
13/16″	....	....	1.50	1.20	2.00	1.50	2.50	1.95	3.00	2.35
⅞″	....	....	1.50	1.20	2.00	1.50	2.50	1.95	3.00	2.35
15/16″	....	....	1.50	1.25	2.00	1.55	2.50	2.00	3.00	2.40
1″	....	....	1.50	1.25	2.00	1.55	2.50	2.00	3.00	2.40
1⅛″	....	....	....	....	2.25	1.75	2.75	2.25	3.25	2.75
1¼″	....	....	....	....	2.50	2.00	3.00	2.50	3.50	3.00
1⅜″	....	....	....	....	2.75	2.25	3.25	2.75	3.75	3.25
1½″	....	....	....	....	3.00	2.50	3.50	3.00	4.00	3.50
1¾″	....	....	....	....	3.50	3.00	4.00	3.50	4.50	4.00
2″	....	....	....	....	4.00	3.50	4.50	4.00	5.00	4.50

Cold Chisels

¾″	(Dressed	1.75	1.50	2.00	1.75	2.50	2.15	3.00	2.50

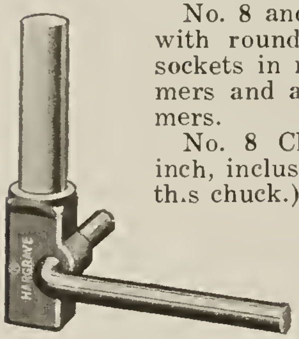
Bull Points

¾″	....	....	....	....	2.25	2.00	3.25	2.75	3.75	3.00

Write for prices on 24″ Star Drills and Diamond Point Drills, Cold Chisels, Bull Points.

ACCESSORIES FOR ELECTRIC HAMMERS

Hargrave Chucks for Hammers



No. 8 and No. 9 Chucks are furnished with round shank .680 diameter to fit sockets in most makes of Electric Hammers and all Pneumatic Chipping Hammers.

No. 8 Chuck—(Star Drills ⅜ to ⅝ inch, inclusive, with our No. 3 shank, fit this chuck.) List price, each $6.70

No. 9 Chuck—(Star Drills ¾ to 1 inch, inclusive, with our No. 4 shank, fit this chuck.) List price each $7.80

STAR DRILLS FOR HARGRAVE CHUCKS

For No. 8 Chuck

Inches Size Drill,	List, Each 8-inch length	List, Each 12-inch Length
⅜	$0.90	$0.95
7/16	.95	1.00
½	1.05	1.10
⅝	1.25	1.30

When ordering, specify No. 3 shank.

For No. 9 Chuck

¾	$1.45	$1.55
⅞	1.65	1.75
1	1.85	1.95

When ordering specify No. 4 shank

STAR DRILLS FOR BLACK & DECKER, VAN DORN, SYNTRON AND MILLERS FALLS CHUCKS

The Star Drills are made with long, specially shaped flutes, enabling them to cut very fast without clogging.

To fit No. 1 B. & D. and Van Dorn Chucks

⅜	$1.20	$1.25
7/16	1.20	1.25
½	1.20	1.25
⅝	1.30	1.35

When ordering, specify No. 5 shank.

To fit No. 2 B. & D. and Van Dorn Chucks

¾	$1.50	$1.60
⅞	1.75	1.85
1	2.00	2.10

When ordering, specify No. 6 shank.

To fit No. 3 B. & D. and Van Dorn Chucks

Size Drill Inches	12-inch length List, Each	18-inch length List, Each
1⅛	$2.60	$3.00
1¼	3.00	3.45
1⅜	3.50	4.00
1½	3.80	4.30

When ordering, specify No. 14 shank.

To fit ⅜″ Syntron and Millers Falls Chucks

½	$1.20	$1.25
⅝	1.30	1.35

When ordering, specify No. 10 shank.

To fit ½″ Syntron and Millers Falls Chucks

¾	$1.50	$1.60
⅞	1.75	1.85

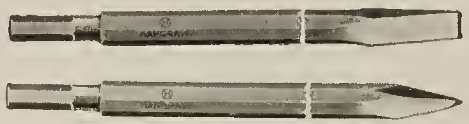
When ordering, specify No. 11 shank.

To fit ¾″ Syntron and Millers Falls Chucks

1	$2.10	$2.50
1¼	3.50	3.95
1½	5.50	6.00

When ordering, specify No. 12 shank.

CHISELS AND STONE POINTS

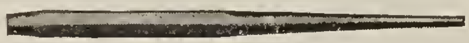


Hexagon Shank Chisels and Stone (Bull) Points to fit B. & D. and most other electric hammers, also pneumatic chipping hammers. Shank is .580 hexagon.

Size, inches	List for chisels or points, each
⅝x10	$1.00
¾x12	1.25
⅞x15	1.75
1 x18	2.20
1¼x24	4.50

When ordering, specify No. 7 shank

DRIFT PUNCHES



No.	Size of Stock, In.	Length, Inches	Taper, Inches	32-inch Point	Each
601	⅜	8	6	4	$0.50
602	½	7	5	5	.50
603	½	9	7	5	.65
604	½	13	7	5	.85
605	⅝	9	6	5	.75
606	⅝	12	9	6	.90
607	⅝	15	9	6	1.00
613	⅝	18	9	8	1.10
612	¾	9	6	6	.85
608	¾	12	9	7	1.10
609	¾	18	9	7	1.35
610	⅞	9	6	8	1.10
614	⅞	14	10	12	1.50
615	⅞	20	10	12	2.00
611	Set of above five Numbers 601, 603, 605, 606, 608, in cartons, per set.				3.90

If center punch point is wanted on above Drift Punches add ½″ to number. 607½, 609½, and 615½ carried in stock.

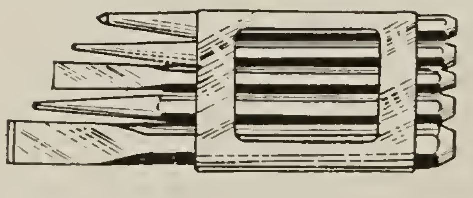
SOLID PUNCH

Made of special analysis alloy steel. Heads painted red, body green. Octagon shaped. Specify Diam. of point when ordering.

Nos.	901	907
Diam. stock, ins.	½	⅝
Length, ins.	6	9
Diam. points, ins.	⅛, 5/32, 3/16, ¼, 5/16	¼
No. in a box	12	6
Weight, lbs., doz.	3½	9
Per doz.	$4.00	8.00

COLD CHISEL AND MACHINE PUNCH SETS

All Purpose



Forged high grade octagon tool steel, tempered. Natural finish.

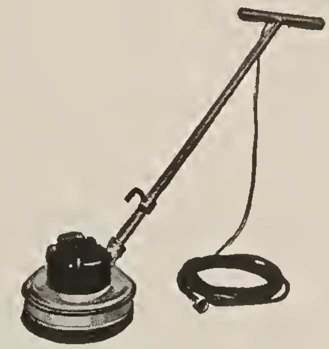
No. R2071—Consists of five tools as follows; one center punch, one each ⅜″ and ½″ machine punch and one each ½″ and ⅝″ cold chisels; net weight per set 1⅛ lbs. List, per set. $0.80

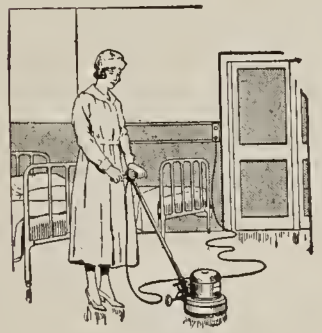
KENT

ELECTRIC FLOOR MACHINES AND VACUUM CLEANERS

FLOOR MACHINES

The DOMESTIC model A is the last word in floor machines—it has a direct gear drive and is NOISELESS. The gear case is totally enclosed. The machine is perfectly balanced. 10 inch diameter brushes and 25 feet of rubber covered cable goes with the machine. The weight on the brush is 35 lbs. It has a trigger switch control and rubber protection bumper.





The DOMESTIC model is built for Waxing, Polishing, Scrubbing or Refinishing.

It is designed for use in Hospitals, Schools, Apartment Houses, Clubs, Lodges, and Private Residences.

WRITE for PAMPHLET and COMPLETE INFORMATION

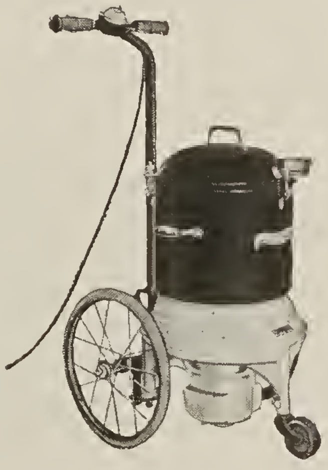
VACUUM CLEANERS

KENT VACUNA VACUUM CLEANERS are ideal for use in Hospitals, Schools, Churches and similar places.

They are quiet-running, light in weight, compact and portable, yet unusually powerful and large in capacity.

Finely built throughout. Strong and sturdy—yet the simplest vacuum cleaners built. They are operated for months without requiring the slightest attention.

Furnished with complete set of cleaning attachments.



KENT

BUILT TO LAST

All KENT machines are guaranteed to be manufactured with the best of materials and workmanship and any parts proving defective within one year from date of purchase will be repaired or replaced free of charge.

Write for a free demonstration.

ELECTRIC MOTORS.

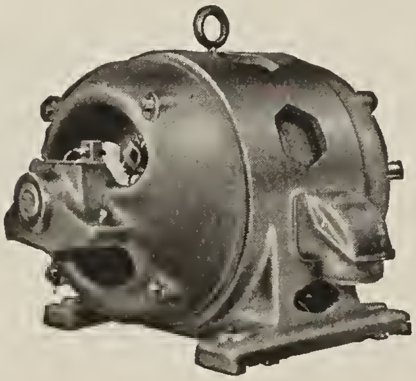
There are three general types of commercial alternating current motors in use today: the "Repulsion Induction," "Squirrel Cage," and "Slip Ring."

The Repulsion Induction motor is a single phase constant speed motor so constructed that it operates on the ordinary lightning circuit. The motor is rugged in construction and quiet in operation, features that make it a popular type of motor where limited power is required.

The Squirrel Cage motor is a three phase constant speed motor embodying the very latest improvements in motor design contributing towards such essentials as simplicity, ruggedness, and dependability. They successfully meet such modern requirements as good starting performance, quiet and cool operation, and high efficiency.

The Slip Ring motor is the only industrial type of polyphase motor adapted to variable speed service. Wide variations of speed may be obtained without complicated arrangements. Starting and speed variation alike are accomplished by means of a controller connected to the slip rings of the motor. The more resistance that is cut out of the controller the greater the speed of the motor becomes and the closer the motor resembles the squirrel cage type of motor.

SINGLE PHASE REPULSION INDUCTION MOTORS—TYPE RA and KA



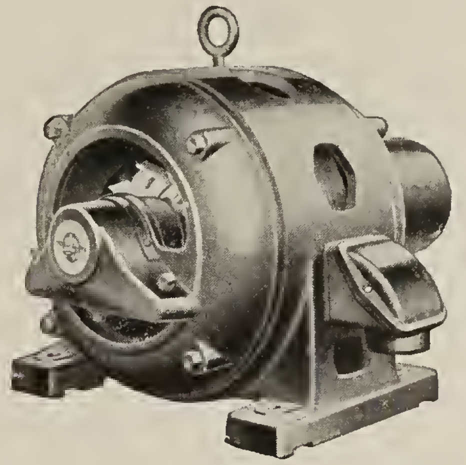
Repulsion Induction motors are constant speed machines and will operate satisfactorily on any equipment which does not require excessive power. These motors are recommended for woodworking machinery, pumps of all kinds, compressors or machines of a similar nature which require a fairly heavy starting duty.

Single Phase Repulsion Induction Motors
110-220 volt, 60 cycle, Single phase
1800 R.P.M.

H. P.	Pulley Diameter Inches	Pulley Face Inches	Weight Pounds
½	3	2½	85
¾	3	2½	90
1	3	2½	95
1½	3	2½	107
2	4	3½	158
3	4	3½	235
5	5	4½	320
7½	5	4½	465
10	6	5½	670
15	8	7	725

POLYPHASE SQUIRREL CAGE MOTORS

Single Squirrel Cake Type RP



Polyphase single squirrel cage motors are consistent speed machines. This type of motor is of the open type and will operate satisfactorily on almost any constant speed service, where extra heavy starting torque is not required and where it is necessary to limit the starting current to very small amounts. They will operate satisfactorily either in groups or in individual drives. These motors are adaptable to almost any construction work and are especially suitable for driving motor generator sets, pumps, and compressors which do not require excessive starting torque.

Type RP—Single Squirrel Cage Motors
220-volt; 60 cycle; 3 phase; 1800 r. p. m.

H. P.	Pulley Dia. Inches	Pulley Face Inches	Wt. lbs.
½	2½	1¾	59
¾	3	2½	77
1	3	2½	86
1½	4	3½	93
2	4	3½	102
3	4	3½	142
5	5	4½	215
7½	5	4½	270
10	6	5½	300
15	8	7	425
20	8	7	460
25	10	8	705
30	10	8	705
40	10	8	755
*50	....	....	1230
*60	....	....	1230
*75	....	....	1345
*100	....	....	1410

*These ratings are for direct connections.

TYPE RY DOUBLE SQUIRREL CAGE MOTORS

Double squirrel cage motors are of the same construction as the above single squirrel cage motors except that they carry another winding on the rotor. This type of motor is designed for applications where a heavy starting duty is necessary as in crushers, plunger pumps, belt conveyors, large air compressors, mixers, punch presses, shears, elevators, cranes, hoists and similar applications where motors are started under a heavy load.

Type RY—Double Squirrel Cage Motors
220 volt; 60 cycle; 3 phase; 1800 r. p. m.

H. P.	Pulley Dia. Inches	Pulley Face Inches	Wt. lbs.
7½	5	4½	270
10	6	5½	300
15	8	7	425
20	8	7	460
25	10	8	705
30	10	8	705
40	10	8	755
*50	....	....	1230
*60	....	....	1230
*75	....	....	1345
*100	....	....	1410

*These motors are for direct connections.

POLYPHASE SLIP RING MOTORS

Slip ring motors may be used for either constant or variable speed service. They are used for constant speed service when it is necessary to limit the starting current or when heavy starting duty is required. Under such conditions they may be used either in groups or individual drives in machine shops or planing mills, or for driving pumps and compressors. This type of motor is also installed where the speed of the motor is to be varied. This is true on such application as hoists, fans, blowers, etc. A slip ring type of motor can be changed from a constant to a variable speed application simply by changing the controller. Nothing need be done to the motor itself.

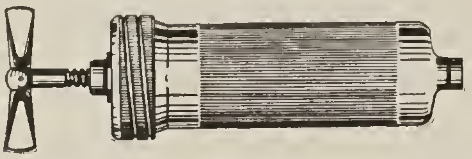
Slip Ring Motors
220 volt; 60 cycle; 3 phase; 1800 r. p. m.

H. P.	Pulley Dia. Inches	Pulley Face Inches	Wt. lbs.
1	4	3½	240
1½	4	3½	240
2	4	3½	240
3	4	3½	240
5	5	4½	350
7½	5	4½	360
10	6	5½	515
15	8	7	545
20	8	7	820
25	10	8	870
30	10	8	870
40	10	8½	1460
*50	....	....	1360
*60	....	....	1400
*75	....	....	2540
*100	....	....	2540

*Direct connection.

ALEMITE LUBRICATING SYSTEM.

HAND COMPRESSORS



1080

Size: Length overall 10½″. Diam. Cylinder 2½″. Capacity 14 ozs. Each $7.00

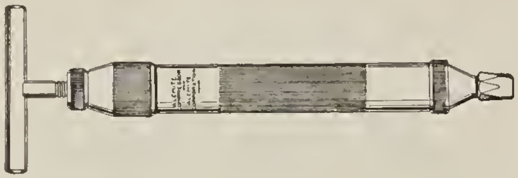
1049

Length 12½″ overall; Cylinder Diameter 2½″. Capacity, 14 ozs. Each $9.00

C-1033

Size overall dimensions 6¾″x2¼″. Capacity 2 ozs. Each $2.25

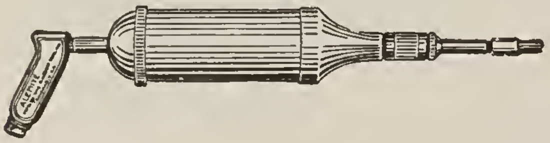
ALEMITE DOT



TSL-179—Capacity 13 ounces	$12.50
TSL-172—Capacity 8 ounces	6.00
SL-171—Capacity 4 ounces	5.00
SL-170—Capacity 2 ounces	3.50

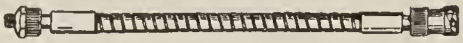
ALEMITE ZERK

Fills Through the Handle



Z-3-G—Capacity 9 ounces	$10.50
Z-7-D—Capacity 4½ ounces	4.00
Z-1048—Capacity 2 ounces	2.00

COMPRESSOR HOSE



Spiral wound, heavy duty, flexible metal hose, complete; ⅛″ connection.

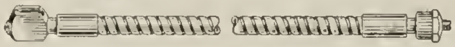
Part No.	Price
A-908-A—15″ H. D. Conduit Hose, ⅛″ connection, each	$4.00
A-909-A—24″ H. D. Conduit Hose, ⅛″ connection, each	5.50
A-966-A—36″ H. D. Conduit Hose, ⅛″ connection, each	7.50
1109—15″ H. D. Conduit Hose, ¼″ connection each	4.00

STANDARD HOSE

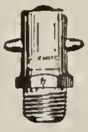
Braided flexible metal hose, complete; ⅛″ connection.

Part No.	Price
HP- 129—8½″ Standard Hose ⅛″ connection	$2.00
A-639—11¾″ Standard Hose, ⅛″ connection	2.00
A-904—24″ Standard Hose, ⅛″ connection	2.50
A-1026—14″ Standard Hose, Check Valve Coupling, ⅛″ connection	2.50
A-1039—14″ Standard Hose, Spl Coupling, ⅛″ connection	2.00

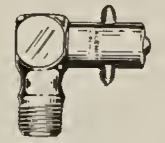
ALEMITE BUTTON HEAD



1116—24″ Heavy Duty Button Head Type Hose ⅛″ connection. Price	$8.00
1110—15″ Heavy Duty Button Head Type Hose ⅛″ connection. Price	7.00
1117—24″ Heavy Duty Button Head Type Hose ¼″ connection. Price	8.25
1107—15″ Heavy Duty Button Head Type Hose ¼″ connection. Price	7.25

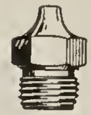


A-336
P.T. Str. Ftg. P.

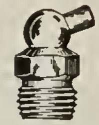


A-358
90° Elbow Ftg.

	Straight	90°	45°
⅛″	.13	.26	.30
¼″	.19	.36	.40
⅜″	.29	.42	.46

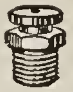


P.T. **Z-137-A**
Straight
Fitting

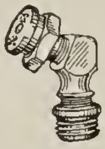


Z-250-AA
P. T. 67½°
El. Ftg.

	Straight	67½°
⅛″	.12	.18
¼″	.20	.25
⅜″	.30	.34

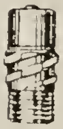


A-1186
Pipe Thread

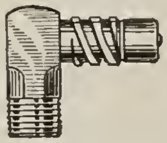


1372
Thread 65°
Button head
Type Elbow

	Straight	65°
⅛″	.19	.39
¼″	.21	.41
⅜″	.30	.51

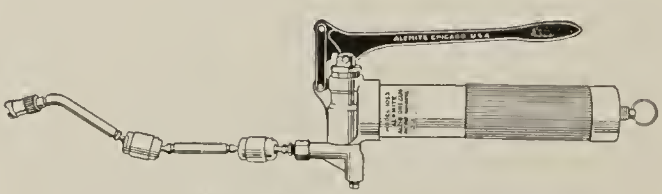


LS
P. T. Fitting



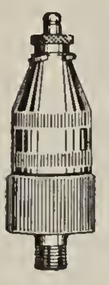
S-254
90° Elbow Ftg.

	Straight	90° 120° 135° 160°
⅛″	.13	.26
¼″	.25	.35
⅜″	.29	.42


ALEMITE CHICAGO U.S.A.

1053—ALEMITE-GAT-ALL-IN-ONE GUN
Chain Type Follower

Price $22.50



ALEMITE AUTOMATIC PRESSURE CUPS
Formerly Dot-O-Matic

The Automatic Pressure Cups were designed for the delivery of a constant quantity of lubricant over a period of time. The flow of the lubricant can be adjusted so that a certain amount of lubricant will be forced into the bearing over a set period of time. These cups are strongly built, deliver a uniform flow of lubricant, are easy to fill and are easy to adjust. They can be used with any of the alemite lubricating systems desired. These cups are made in two styles, the Plain Automatic and the Adjustable Automatic. All cups show amount of lubricant delivered by the position of the plunger.

Plain Automatic Pressure Cups

The Plain Automatic does not have the feature of feed control but does deliver the lubricant at a uniform rate. The springs can be changed to a different tension to obtain a more or less rapid flow of lubricant.

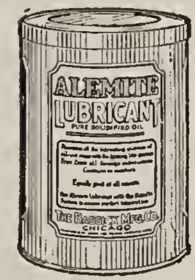
Part No.	Size of Fill Hole	Size of Shank	Price
SL-411—½ ounce	⅛" p. t.	⅛" p. t.	$2.35
L-413—1 ounce	⅛" p. t.	¼" p. t.	2.50
R-413—1 ounce	¼" p. t.	¼" p. t.	2.50
L-415—2 ounce	⅛" p. t.	¼" p. t.	4.25
R-415—2 ounce	¼" p. t.	¼" p. t.	4.25

Adjustable Automatic Pressure Cups

The Adjustable Automatic Pressure Cups are identical to the Plain Automatic Cups with the exception of the adjustment at the top of the cup. With this adjustment the rate of flow of lubricant can be set so that the cup will empty itself in a day's time or in two weeks time.

Part No.	Size of Fill Hole	Size of Shank	Price
L-412—1 ounce	⅛" p. t.	¼" p. t.	$2.75
R-412—1 ounce	¼" p. t.	¼" p. t.	2.75
L-414—2 ounce	⅛" p. t.	¼" p. t.	4.50
R-414—2 ounce	¼" p. t.	¼" p. t.	4.50
L-416—4 ounce	⅛" p. t.	½" p. t.	8.25
R-416—4 ounce	¼" p. t.	½" p. t.	8.25

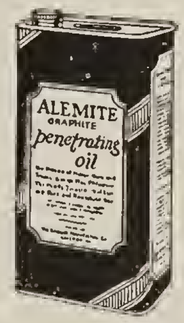
Cups with L prefixed to the part number have ⅛" P. T. fill hole. Cups with R prefixed to the part number have a ¼" P. T. fill hole. All cups will fit bearing holes of all sizes by the use of bushings.



The efficiencies of Alemite lubricant is not impaired by temperatures from 30° below zero to 250° above. It does not cake nor gum but it lubricates.

L-939—One-pound can	$0.40
L-900—Five-pound can	1.50

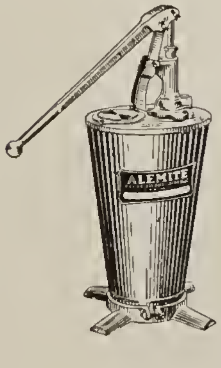
ALEMITE GRAPHITE PENETRATING OIL
The "4" Duty Oil



Penetrates, Lubricates, dissolves rust, stops corrosion. The unusual penetrating qualities of Alemite Penetrating Oil enables it to force its way in a remarkably short time into the smallest crevices. It dissolves rust, lubricates perfectly, and leaves a film of oil and dry graphite. There's no nut, bolt, coupling or joint rusted too tightly for it to release.

O-925—Pint can	$0.75
O-926—Gallon can	4.50

GIANT BUTTON HEAD SYSTEM

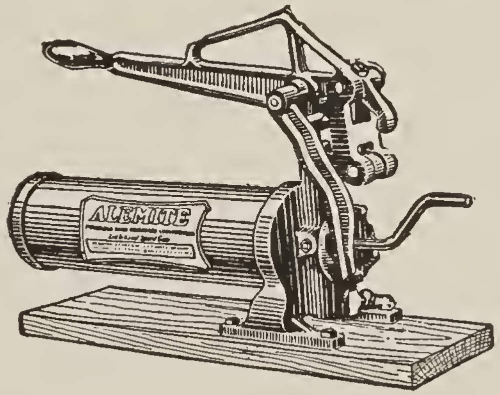


All Metal Compressor—Particularly designed for volume lubrication—twenty-eight pounds capacity—500 pounds pressure easily developed—1 1/5 ounces delivered with each stroke of handle—best results obtained by use of Heavy Oil or Semi-solid lubricant.

Alemite Volume Compressor

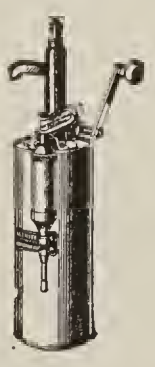
Net price	$20.00
With 5½ feet of hose add	17.50

ALEMITE H-5-A SERVICE COMPRESSOR



H-5-A Compressor with 6 feet of hose......$47.00

1010—ALEMITE PUSH TYPE FILLER TANK



The Alemite Push Type Filler Tank is a portable lubricant container to be used in quickly filling the Alemite Push Type Compressors shown on page 236. The capacity of the 1010 Filler Tank is 20 pounds of lubricant and it is easily carried from place to place. To fill a compressor with the Filler Tank, remove the plug from the compressor handle and push the handle over the rigid nozzle of the Filler Tank. One complete turn of the pump is sufficient to fill the average compressor. The 1029 Filler Tank is equipped with a bracket on which to hang the compressor when it is not in use.

Price $16.00

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

INDUSTRIAL LUBRICATION

GREDAG
LUBRICANT

Gredag Lubricants weather all storms. The operation of power shovels, cranes, ditchers, hoists, mixers, crushers, conveyors and other outdoor equipment, under the most vigorous conditions of weathering heat, freezing, cold, rain, sleet and flying grit. Constitutes a test which many lubricants are unable to withstand.

Wherever instructions call for a "soft cup grease," "ordinary cup grease," or "common yellow grease," Gredag No. 52 meets the requirements, plus the benefits of Acheson Lubricating Graphite and Gredag quality.

Use in pressure lubricating systems; crane bearings not exposed to heat from brakes or surroundings; belt conveyor roll cups; crusher roll bearings; high speed Griffin Mill lower bearing; power shovel cups or pressure gun fittings; pump bearing cups; Raymond Mill roller arms, grinding cold material.

No. 55—25 lb. pails only $6.00

Made for heavy pressure, low speed work. Wherever instructions call for "hard cup grease," Gredag No. 55 gives extra service.

Use on steam shovel engine and hoist drum shaft bearings, where steam ram line enters; cement mill cups and crane bearings, not exposed to brake heat or hot surroundings; cups on heavy pump bearings, heavy crushing and conveying machinery; mine hoisting machinery cups; automobile water pumps, etc.

No. 66—25 lb. pails only $6.00

For large, rough, open gears, especially under dusty or dirty conditions which cause most greases to roll off the gear surfaces.

Very sticky. Should be warmed, then applied thinly, after cleaning gears. Sold only in 400-lb. drums and 25-lb. pails.

Use on power shovel gears; tube and ball mill gears, etc.

No. D-51—25 lb. pails only $6.00

Gredag also sold in 100 lb., 400 lb. drums and in bulk. Price on request.

CRATER COMPOUND

Special for Gears, Chain, Cable, Wire Ropes, Etc.

TEXACO
CRATER COMPOUND

This is the only real compound that we have found that will stick and stay put on gears, chain and wire rope. To apply, heat until it runs freely, then pour on gears and chain. For wire rope draw cable through the warm fluid. It will save its cost in a short time. Carried here in Kansas City in 25-lb. cans only.

Texaco Crater Compound,
25-lb. cans, each $5.00

TEXACO SPECIAL EXTRA HEAVY MOTOR OIL

TEXACO
MOTOR OIL
MEDIUM

Especially recommended for all Homelite pumps. Carried in Kansas City in 5-gallon cans only.

Texaco Special Extra Heavy Motor Oil, 5 gal., crated. Each $9.00

GALENA -OILS-

For sure, safe service and positive protection to equipment!

The use of lubricants unsuited to the operating requirements of certain types of mechanical equipment often leads to troublesome difficulties and invariably results in a service efficiency much below the machine's capabilities.

It is for this reason that representative engineers and equipment manufacturers specify or recommend GALENA OILS, the lubricants of highest basic quality. Particularly in air cylinders and internal combustion engine operation, their superior ability to withstand extreme temperatures with a minimum of the carbonizing, distillation and deterioration peculiar to the average grade oils, provides a desirable margin of safety and extends very substantially the life of the machine.

GALENA AIR COMPRESSOR OIL

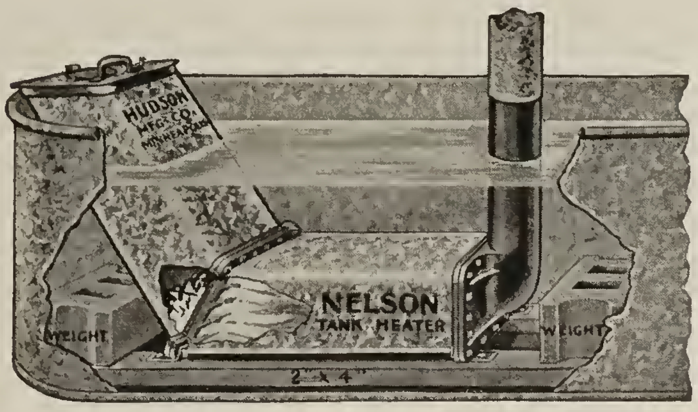
BUCYRUS ERIE SPECIAL GALENA COMPRESSOR OIL

BUCYRUS ERIE SPECIAL GALENA MOTOR OIL

Are typical Galena products that have demonstrated by exceptional service records the value of applying discriminating judgment to the selection of suitable lubricants for this class of operation.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

NELSON TANK HEATER

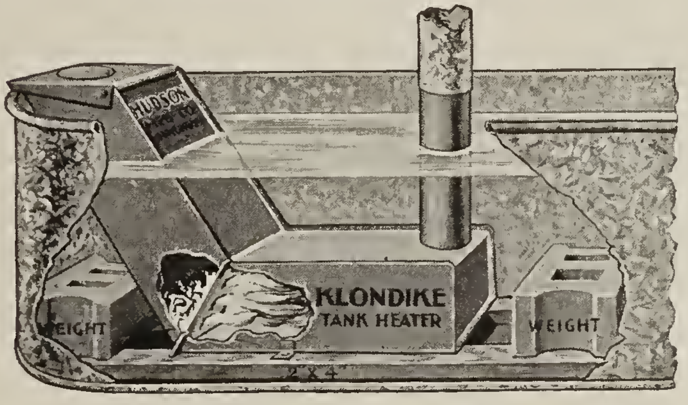


No heat wasted in warming up the heater for the galvanized heat chest radiates the heat of the fire instantly to the water. The seams are all double locked and asbestos packed and guaranteed water tight. No soldered joints to melt or crack and leak. The cast iron smoke pipe is immune to the action of dripping creosote and the resulting rust, and will far outlast any other material for this purpose. Basket grate removed through feed door and holds fire while ashes are easily removed. Burns straw, corn cobs, rubbish, coal or wood. Every heater guaranteed perfect, and with ordinary care will last for years. All heaters equipped with ash shovel, spark arrester, two lengths galvanized stove pipe and hold down lugs.

48 ins. long, 15 ins. wide, 26 ins. high. Wgt about 100 lbs. (With Grate)

Nos.	56	58
Grate	No Grate	With Grate
Each	20.00	22.60

KLONDIKE TANK HEATER



The Klondike is the one-piece construction submerged type of tank heater. The seams are acetylene welded by a special procss. The heater is made from 14 gauge blue annealed copper bearing steel sheets.

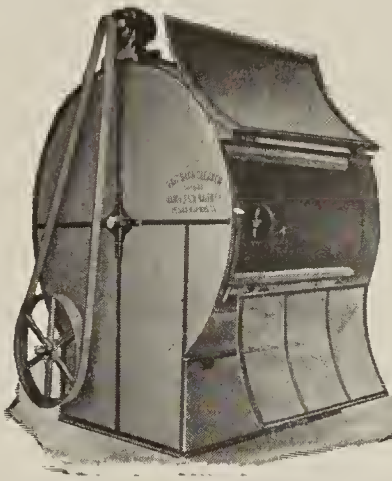
This tank heater will burn any kind of fuel from corn cobs to hard coal. For coal a basket grate is required. For wood or other fuel a grate is not needed but is desirable.

All heaters equipped with ash shovel, spark arrester, two lengths galvanized stove pipe. Hold down lugs welded on side of heater.

42 ins. long, 12 ins. wide, 25 ins. high. Wgt. about 75 lbs. (With Grate)

Nos.	1	2
Grate	No Grate	With Grate
Each	$13.30	$15.90

THE HANDY SACK CLEANER



The Unit Sack Cleaner is made in six sizes for varying needs. It consists of a steel drum revolving in a metal housing, beating the dust out of the sacks through the heavy wire mesh covering the drum. It has a long term of life, electrically welded together wherever possible, and made in the following sizes:

Size	Average Capacity, sacks	Capacity per day, bags	Weight, Lbs.	Floor Space
No. 00	70	1500 to 2000	480	4′4″x3′
No. 0	125	2800 to 4000	800	3′6″x4′7″
No. 1	200	5000 to 6000	1200	4′6″x5′1″
No. 2	350	8000 to 10000	1600	4′7″x6′1″
No. 3	450	11000 to 14000	1800	5′ x6′8″
No. 4	600	15000 to 18000	2200	6′ x7′8″

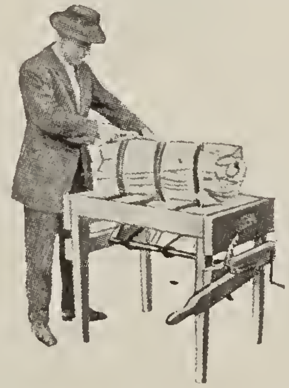
Above cleaners furnished with or without electric motor or gasoline engine. State how wanted when ordering.

The Handy Sack Baler is a simple, sturdy machine, very easy to operate and guaranteed for 10 years' service. As a machine for tying up bags it is an efficient machine which you cannot afford to be without. It is made in the following sizes:

Item	Price
Standard Baler, for 50 sacks	$49.50
Plaster Baler, for 50 sacks	58.50
Combination Baler, for 50 sacks	69.75

Don't forget we have the lowest price on wire straightened and cut to the proper length for tying up any kind of sacks.

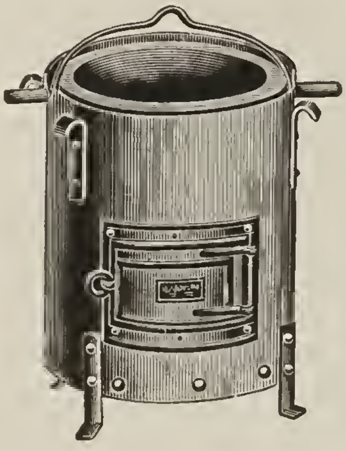
ROWE SACK BALER



Make a triple-bound 50-sack bale in three operations. Sacks cannot be removed without cutting wire. Stops deductions for losses in shipments. Saves labor and time. Light and compact. Easy to carry. Bales cement or plaster sacks without change or adjustment. This baler is endorsed by leading cement and plaster manufacturers.

Rowe Sack Baler $35.00

LEAD MELTING FURNACES



253 Lead Melting Furnaces—Coal Burning.

On legs as above, capacity 260 lbs. of lead	$50.00
Same, as above, caapcity 600 lbs. of lead	60.00
Small Salamander type, 260 lbs. of lead	40.00
On two wheels, capacity 700 lbs. of lead	92.00
On two wheels, capacity 260 lbs. of lead	80.00

LEAD MELTING KETTLES

Lead Melting Kettles, flanged.

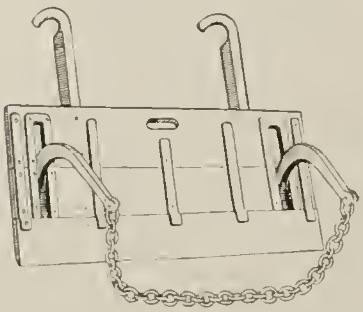
Diameter	Depth	Liquid	Lead	Weight	
11½"	8 "	3½ gal.	260 lb.	75 lb.	$15.00
15½"	10½"	6 gal.	600 lb.	105 lb.	18.00
16¾"	11 "	7 gal.	700 lb.	135 lb.	21.00

LEAD POURING POTS

Lead Pouring Pot, cast iron, with bail

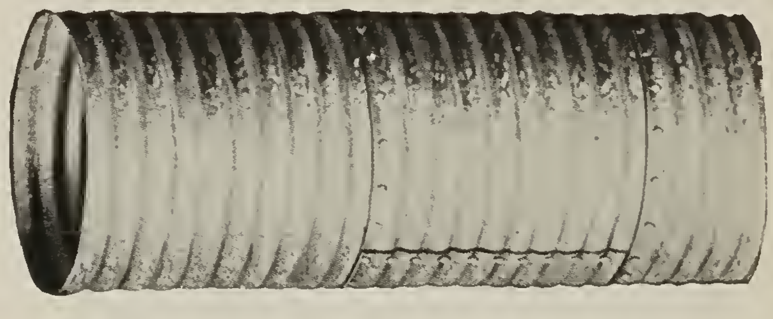
	Dia.	Depth	Liquid	Lead	Wt.	
Single Lip	7 "	6 "	5 pints	50 lbs.	15 lbs	3.00
	10 "	6½"	5 qts	100 lbs.	35 lbs	5.50
Double Lip	5½"	5 "	3 pints	35 lbs.	8½lbs	2.75

DOAN FLAT BOARD SCRAPER



Complete as Illustrated K. C. Stock...............$12.50

GALVANIZED CORRUGATED CULVERTS



Immediate shipment from K. C. Stock.

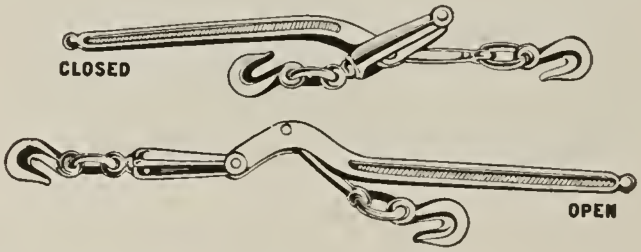
Diameter In Inches	Gauge	Weight Per Foot	Grade "A" Copper Bearing Iron	Grade "B" Copper Bearing Steel
10	16	8.5 lbs.	.88	.80
12	16	10.8 lbs.	1.02	. 93
12	14	12.9 lbs.	1.21	1.09
15	16	13.2 lbs.	1.28	1.16
15	14	16 lbs.	1.53	1.36
18	16	16 lbs.	1.53	1.38
18	14	19.1 lbs.	1.82	1.60
20	16	17.9 lbs.	1.68	1.52
20	14	22.3 lbs.	2.04	1.79
24	16	20.5 lbs.	2.00	1.80
24	14	25.6 lbs.	2.44	2.15
30	16	25 lbs.	2.50	2.25
30	14	32 lbs.	2.96	2.66
30	12	44 lbs.	4.10	3.69
36	16	30 lbs.	2.92	2.63
36	14	37.5 lbs.	3.60	3.24
36	12	53.2 lbs.	4.83	4.42
42	14	43.7 lbs.	4.15	3.73
42	12	58.7 lbs.	5.64	5.10
48	14	48 lbs.	5.01	4.52
48	12	68.5 lbs.	6.87	6.03
60	12	86 lbs.	9.73	9.20

THE ABOVE PRICES ARE F. O. B. CARS ANY RAILWAY STATION IN MISSOURI AND KANSAS—Add 10 per cent to above prices for shipment in Oklahoma.

No charge for reinforcing ends. Connecting Bands are the same price as for one foot of Culvert of the same gauge, diameter and quality of material.

We positively GUARANTEE all OUR CULVERTS to conform to any State Specifications, also Federal Specifications.

THE AMERICAN ALL STEEL LOAD BINDER



The American All Steel Load Binder is the strongest tool of its kind on the market today. Every part is of forged steel. The lever, which must be stiff and strong, is made —of carbon steel. The clevis, tongue, swivel, links and hoooks are all tough close texture steel, drop forged.

No 306 Standard Size. Weight 7¼ lbs. each, takes up ½" chain, lever 20", take up 4½".
Per Dozen ....List $24.00

No. 651 Regular Size. Weght 8⅓ lbs. each, takes up to ½" chain, lever 22", take up 5½".
Per Dozen ....List $28.00

No. 652 Large Size. Weight 14¾ lbs. each, take up to ⅝" chain, lever 24½", take up 5".
Per Dozen ....List $40.00

PYRENE FIRE EXTINGUISHERS.

It takes fire but a few minutes to undo what has taken weeks to construct. Protect your scaffolding, formes, and braces. Paint, oil, gasoline, wax, grease are all found around the construction job and are easily ignited by the careless match, hot rivet or flying spark. A few dollars spent in protection may enable you to save a great amount of money and to finish a job within the time limits.

AUTOMOBILE TYPE

This popular portable extinguisher is just the thing to end small blazes. It is made in 1, 2, and 3-pint sizes and can be attached to wall, machinery, or any handy place. This extinguisher is most effective on gasoline fires or blazes in engines and machinery.

All three sizes and the refill charges are carried in stock for immediate shipment to your jobs.

PHOMENE EXTINGUISHER

The Phomene Extinguisher is effective on all classes of fires, including oil, gasoline, naphtha, enamel, tar, wax, grease, shellac, lacquers, and inflammable solvents and chemicals. This two and one-half gallon extinguisher will eject twenty-two gallons of tough fireproof foam which quickly spreads itself over the burning surface and cuts off the oxygen. The foam blankets remain over the extinguished surface, preventing reigniting. Phomene foam does no damage to any kind of material.

This is the only extinguisher of this size which is successful on a gasoline or oil fire. The Phomene Extinguisher comes in a polished copper container.

Phomene
FOR FIRE

GUARDENE EXTINGUISHER

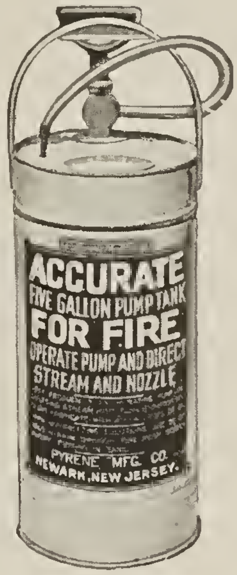
Guardene
FOR FIRE

The Guardene Extinguisher is the popular soda and acid type and is designed to combat all ordinary blazes. The pressure in the tank will throw a stream of water 30 feet. This extinguisher will eject only 2½ gallons of water and is not recommeded for fires of inflammable liquids. The Guardene extinguisher comes in a 2½-gallon polished copper container. The Guardene should be re-charged every year with the special package put out by the Pyrene Company. These are carried in stock at all times.

FIVE-GALLON PUMP TANK

This pump tank throws a steady stream of water forty feet. It can be charged with non-freezing liquid for low temperatures. This 5-gallon pump can be recharged during operation, which makes it possible to keep up flow until fire is extinguished.

On the job where a supply of lumber or other dry materials this pump tank is just the thing for protection. The forty-foot stream of water enables you to get within reach of any blaze on your job. Remember this extinguisher throws only a stream of water.

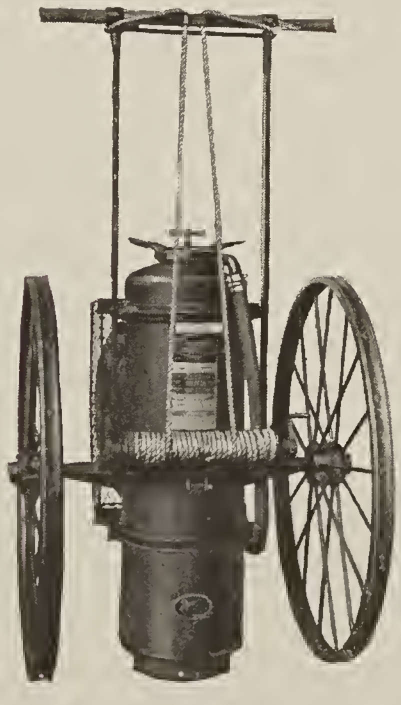


PHOMENE EXTINGUISHERS ON WHEELS

For the large job or for the construction job where a great deal of gasoline or oil is stored, the Phomene Extinguisher mounted on wheels is the ideal outfit. These extinguishers are made in two sizes, 10 and 40 gallon capacities and the large size comes equipped for outdoor or indoor use. These machines are indorsed by the Underwriters' Laboratories.

The 10-gallon tank is mounted on 16-inch wheels and weighs 223 pounds when charged. It is made of cold rolled copper and has eight feet of ¾-inch chemical hose.

The indoor type 40 gallon size, is mounted on 50 inch wheels and weighs 810 pounds charged. It is equipped with 50 feet of 1¼-inch chemical hose. It is equipped with a short handle.



The Outdoor type is exactly the same as the above except it is equipped with a larger handle and a rope for pulling over rough places. Weight 890 lbs. charged.

RECOMMENDATIONS OF THE INSTIIUTE OF MAKERS OF EXPLOSIVES FOR THE USE AND HANDLING OF EXPLOSIVES

1. **DON'T** store blasting caps, electric blasting caps, high explosives or blasting powder in a residence, home, boarding house, or any other human habitation, or leave them lying around where children can get them.
2. **DON'T** leave explosives in a wet or damp place. They should be kept where it is clean, cool, dry and well ventilated.
3. **DON'T** store explosives so that cartridges stand on end.
4. **DON'T** store fuse in a hot place as this may injure the fuse and cause the waterproofing material to damage the powder train.
5. **DON'T** leave explosives in a field or any place where stock can get at them. Cattle like the taste of salts in explosives, but these or other ingredients will probably make them sick or kill them.
6. **DON'T** store explosives in or near a blacksmith shop.
7. **DON'T** open cases of explosives in a magazine.
8. **DON'T** throw packages of explosives violently down or slide them along floors or over each other or handle them roughly in any manner.
9. **DON'T** keep blasting caps or electric blasting caps in the same box, container, or magazine with other explosives.
10. **DON'T** leave high explosives, blasting caps or electric blasting caps exposed to the direct rays of the sun.
11. **DON'T** thaw explosives in a magazine.
12. **DON'T** thaw high explosives by putting them in hot water or steam or over or in front of a steam boiler or fire, or on heated stones, bricks, rocks, or metal surfaces, in hot sand or ashes, or in an oven or stove.
13. **DON'T** carry blasting caps or electric blasting caps in the bed or body of a vehicle containing other explosives.
14. **DON'T** smoke while using or handling any explosives.
15. **DON'T** handle explosives near open lights, other fire or flame, or sparks.
16. **DON'T** have matches about you while handling explosives.
17. **DON'T** use any tools other than wooden wedges and wooden, fibre or rubber mallets for opening cases containing high explosives.
18. **DON'T** drive a hole into a keg of blasting powder, but open the keg by removing the slide from the bung.
19. **DON'T** use frozen high explosives.
20. **DON'T** cut or break frozen cartridges of high explosives.
21. **DON'T** force a cartridge of high explosives, especially a primer, into a bore hole.
22. **DON'T** explode a charge to spring or chamber a bore hole and then load another charge into it before it has cooled sufficiently.
23. **DON'T** use damaged leading or connecting wire in blasting circuits.
24. **DON'T** make electrical connection without first scraping the ends of the wires bright and clean, and unless insulated do not allow joints to touch other joints, bare wire, rails, pipes, ground or other possible source of current or path of leakage.
25. **DON'T** connect leading wire to blasting machines or allow it to come in contact with any other source of electrical current until immediately before firing and everyone is in a safe place.
26. **DON'T** connect up or load bore holes for electric firing during the approach or progress of a thunder storm, and if charges are already loaded and connected, all persons should be kept at a safe distance from them while the storm is in progress. If necessary to leave over night, ends of the wires should be twisted together, coiled and covered with dirt.
27. **DON'T** crimp blasting caps to fuse with pliers, knife blade or with the teeth, but see that the blasting cap is securely attached to the fuse by means of a suitable cap crimper.

HERCULES EXPLOSIVES.

28. **DON'T** allow priming (placing of a blasting cap or electric blasting cap in the dynamite cartridge) to be done in a thawing house or magazine.

29. **DON'T** use any blasting cap or electric cap weaker than No. 6.

30. **DON'T** have electric wires or cables which may be carrying current, near blasting caps, electric blasting caps, explosives or charged bore holes at any time except for the purpose of firing the blast.

31. **DON'T** fire a blast before all persons are at a safe distance or under sufficient cover, and all explosives are in a safe place.

32. **DON'T** attempt to investigate a misfire too soon even though it is thought the fuse has not been lighted or has gone out. A safe time, at least an hour or more, should be allowed before returning to a misfire. Misfires should be handled under the direction of the person in charge of the blasting in accordance with his best judgment.

33. **DON'T** drill, bore or pick out a charge of explosives that has misfired. Where required by law, drill another bore hole at least two feet from the missed one. If this is done make careful search for unexploded material in the debris. In some cases, as in well drill, sprung or block holes, or others, it is often advisable to carefully remove the stemming or make a hole through it to within a safe distance of the charge of explosive, then reprime and explode the charge.

34. **DON'T** cut fuse on a slant, but cut it square across. Cutt off an inch or two of fuse to insure having fresh end inserted in blasting cap, and see that the fuse is seated against the detonating agent in the cap.

35. **DON'T** use short fuse. Cut fuse sufficiently long to extend beyond collar of hole and sufficiently long for safety in retiring from blast.

36. **DON'T** tamp with iron or steel bars or tools. Use only a wooden stick with no exposed metal parts.

37. **DON'T** allow explosives or drill holes while being loaded with explosives, to be exposed to sparks that might come from steam shovels or locomotives in operation.

38. **DON'T** attempt to use electric blasting caps with regular insulation in very wet work. For this purpose use waterproof electric blasting caps.

39. **DON'T** use electric blasting caps or other electric firing devices of different manufacture in the same circuit.

40. **DON'T** use parallel or series parallel connection when firing with a blasting machine. With power circuit, when sufficient voltage and current are available, parallel or series parallel connection is preferred; with high voltage power current, series connections are liable to cause short circuits.

41. **DON'T** use dynamite or blasting powder with permissible explosives in the same bore hole in coal mines.

42. **DON'T** handle fuse carelessly in cold weather. When cold it is stiff and breaks easily. It should be warmed slightly before using. Avoid kinks in fuse and wires.

43. **DON'T** attempt to take blasting caps from a box by inserting a wire, nail or other sharp instrument.

44. **DON'T** spare force or energy in operating blasting machines.

45. **DON'T** attempt to remove or investigate the contents of a blasting cap or electric blasting cap.

46. **DON'T** carry blasting caps or electric blasting caps in pockets of clothing.

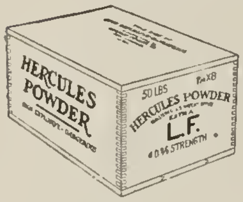
47. **DON'T** try to withdraw the wires from an electric blasting cap.

48. **DON'T** tap or otherwise investigate blasting caps or electric blasting caps.

49. **DON'T** shoot into any explosives with firearms.

HERCULES EXPLOSIVES

HERCULES EXTRA L. F. DYNAMITE



The Extra dynamites are sometimes called Ammonia dynamites, because a portion of the nitroglycerin is replaced by nitrate of ammonia. They are splendidly adapted for general all-around work—quarrying, road and railroad construction, clay blasting, certain kinds of mining, and agricultural work—as they are safer to handle than many other explosives, and it is difficult to ignite them by the side-spit of a fuse. Their fumes are not objectionable for underground work.

Prices below, in lots of 200 pounds or more are F. O. B. your nearest railroad station in—

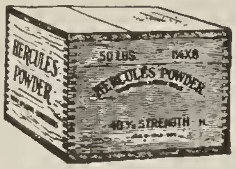
Missouri and Kansas
L. F. Extra (Ammonia)

Grade	Ton Lots	500 Lb. Lots	Less Than 500 Lbs.
60%	$18.25	$20.75	$22.75
50%	17.25	19.75	21.75
40%	16.25	18.75	20.75
33%	15.90	18.40	20.40
30%	15.75	18.25	20.25
25%	15.50	18.00	20.00
20%	15.25	17.75	19.75

Oklahoma and Arkansas
(L. F. Extra (Ammonia)

Grade	Ton Lots	500 Lb. Lots	Less Than 500 Lbs.
60%	$19.25	$21.75	$23.75
50%	18.25	20.75	22.75
40%	17.25	19.75	21.75
33%	16.90	19.40	21.40
30%	16.75	19.25	21.25
25%	16.50	19.00	21.00
20%	16.25	18.75	20.75

HERCULES STRAIGHT NITROGLYCERIN L. F. DYNAMITE



The low freezing straight nitroglycerin dynamites have a high rate of detonation; they shatter the material blasted more than the slower explosives do. They resist water fairly well, but are not recommended for underground work because of the relatively large amount of noxious fumes produced by the higher strengths on detonation. As the straight nitroglycerin dynamites are readily ignited by the side-spit from a fuse, the primer cartridge, if cap and fuse are used, should be placed at the top of the charge.

Prices below, in lots of 200 pounds or more, are F. O. B. your nearest railroad station in—

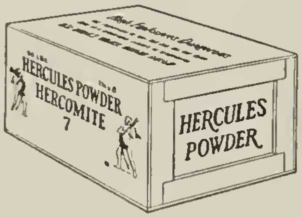
Missouri and Kansas
L. F. Straight Nitroglycerin

Grade	Ton Lots	500 Lb. Lots	Less Than 500 Lbs.
60%	$20.00	$22.50	$24.50
50%	18.75	21.25	23.25
40%	17.50	20.00	22.00
35%	17.00	19.50	21.50
33%	16.80	19.30	21.30
30%	16.50	18.50	20.50
25%	16.00	18.50	20.50
20%	15.50	18.00	20.00
15%	15.00	17.50	19.50

Oklahoma and Arkansas
L. F. Straight Nitroglycerin

Grade	Ton Lots	500 Lb. Lots	Less Than 500 Lbs.
60%	$21.00	$23.50	$25.50
50%	19.75	22.25	24.25
40%	18.50	21.00	23.00
35%	18.00	20.50	22.50
33%	17.80	20.30	22.30
30%	17.50	20.00	22.00
25%	17.00	19.50	21.50
20%	16.50	19.00	21.00
15%	16.00	18.50	20.50

HERCOMITES 2 to 7



HERCOMITES 2 to 7—General purpose explosives for mining, quarrying, construction, agricultural blasting—240 cartridges for No. 2, to 350 for No. 7. Also **HERCOMITE BAG** packed in 12½-lb. bags, replaces extra L. F. at considerable saving; very economical where suitable.

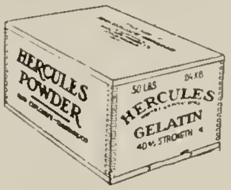
Missouri and Kansas
Hercomites 2 to 7

Ton Lots	500 Lb. Lots	Less Than 500 lbs.
$17.25	$19.75	$21.75

Oklahoma and Arkansas
Hercomites 2 to 7

Ton Lots	500 Lb. Lots	Less Than 500 lbs.
$18.25	$20.75	$22.75

HERCULES GELATIN L. F. DYNAMITE



Gelatin dynamites are made by gelatinizing nitroglycerin before the absorbent is added. This produces an explosive which is dense and plastic, more water-resisting and less bulky than other high explosives of corresponding grades, and one which produces a relatively small amount of noxious fumes. When gelatin is detonated with a straight nitroglycerin dynamite primer, the rate of detonation is greatly increased. The density, waterproof properties, and plasticity of gelatins make them particularly advantageous for loading in the bottom of well drill holes for blasting in tight rock, or for loading bore holes with an upward pitch.

Uses: Shaft sinking, tunnel driving, underground work where ventilation is poor, wet work under water, quarrying in tight rock, ore mining and blasting ice.

Prices below, in lots of 200 pounds or more, are F. O. B. your nearest railroad station in—

Missouri and Kansas
Extra L. F. Gelatin

Grade	Ton Lots	500 Lb. Lots	Less Than 500 Lbs.
75%	$22.50	$25.00	$27.00
60%	19.50	22.00	24.00
50%	18.25	20.75	22.75
40%	17.00	19.50	21.50
35%	16.65	19.15	21.15
30%	16.25	18.75	20.75
25%	15.90	18.40	20.40
20%	15.50	18.00	20.00

Oklahoma and Arkansas
L. F. Gelatin

Grade	Ton Lots	500 Lb. Lots	Less Than 500 Lbs.
75%	$23.50	$26.00	$28.00
60%	20.50	23.00	25.00
50%	19.25	21.75	23.75
40%	18.00	20.50	22.50
35%	17.65	20.15	22.15
30%	17.25	19.75	21.75
25%	16.90	19.40	21.40
20%	16.50	19.00	21.00

HERCULES GELATIN EXTRA L. F.

(Low Freezing)

Hercules Gelatin Extra L. F. grades are similar to Hercules Gelatin L. F. (straight gelatins) in characteristics. In their manufacture ammonium nitrate is substituted for a part of the nitroglycerin used in regular gelatins. This enables them to be sold for less than straight gelatin. The strengths of Gelatin Extra L. F. are the same as the corresponding regular gelatin grades. The water resistance is almost as good as the regular gelatins, and in practice they give practically identical results.

Missouri and Kansas
Extra L. F. Gelatin

Grade	Ton Lots	500 Lb. Lots	Less Than 500 Lbs.
75%	$21.50	$24.00	$26.00
60%	18.75	21.25	23.25
50%	17.50	20.00	22.00
40%	16.50	19.00	21.00
35%	16.15	18.65	20.65
30%	15.75	18.25	20.25

Oklahoma and Arkansas
Extra L. F. Gelatin

Grade	Ton Lots	500 Lb. Lots	Less Than 500 Lbs.
75%	$22.50	$25.00	$27.00
60%	19.75	22.25	24.25
50%	18.50	21.00	23.00
40%	17.50	20.00	22.00
35%	17.15	19.65	21.65
30%	16.75	19.25	21.25

These prices apply for standard size Cartridge and Package.

Freight will be allowed on shipments of 200 or more pounds to any point on rail or boat lines handling High Explosives. No charges other than regular freight rates allowed.

Less than 200 pounds shipments are f. o.b. distributing points.

GELAMITE 2

GELAMITE 2—Semi-plastic, water-resisting, bulkier than the gelatins; used for underground, quarry, and general purposes; often replaces gelatins up to 40% strength at saving in cost, 240 cartridges.

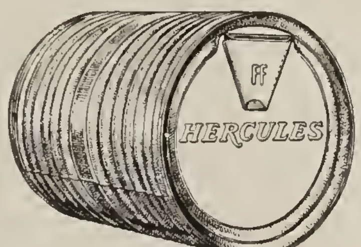
Missouri and Kansas
Gelamite 2

Ton Lots	500 Lb. Lots	Less Than 500 lbs.
$17.75	$20.25	$22.25

Oklahoma and Arkansas
Gelamite 2

Ton Lots	500 Lb. Lots	Less Than 500 lbs.
$18.75	$21.25	$23.25

HERCULES BLASTING POWDER



Hercules "B" Blasting Powder is for use in nongaseous coal mines, coal stripping, quarry, and construction work. It is manufactured in all sizes of (glazed) grains, from FFFF, about 1-16 inch diameter to CCC, about ¾ inch diameter.

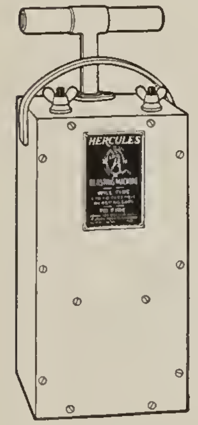
Less Than Carload Prices
F. O. B. Nearest Railroad Station

	Missouri	Kansas	Oklahoma
8 kegs	$2.50	$2.60	$2.65
80 kegs	2.20	2.30	2.35

Less Than Eight Kegs
F. O. B. Place of Shipment

Columbus, Kans.	$2.60
Dexter, Mo.	2.50
Joplin, Mo.	2.50
Kansas City, Mo.	2.50
Pittsburg, Kans.	2.60
Springfield, Mo.	2.50
St. Louis, Mo.	2.50
Tulsa, Okla.	2.65
Oklahoma City, Okla.	2.65

HERCULES BLASTING MACHINES

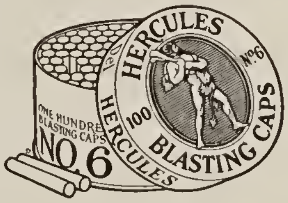


Hercules Blasting Machines are portable dynamos or magnetos which operate by rotating the armature. There are three sizes:

Machine	Capacity	Net Wt.	Cost per Each
1 to 50 hole	50 E. E. Caps	22⅝ lbs.	$35.00
10 Cap	10 E. B. Caps	4 lbs.	18.00

With the new type of 1 to 50 hole machine the blasting circuit is closed at the instant of maximum voltage and amperage, and the current is maintained in the circuit for a longer period than with the old type machine. Although the 1 to 50 hole machine has fired up to 200 electric blasting caps connected in series, and the 10 cap machine has fired 30 caps, we rate the capacity at 50 caps and 10 caps, respectively, because for the large machine we do not recommend connecting more than fifty electric blasting caps in one series under working conditions, and for the 10 cap machine we also allow a large factor of safety.

HERCULES BLASTING CAPS



Blasting Caps are made in two sizes, No. 6 and No. 8; the No. 8 having twice the charge of the No. 6. They contain an intimate mixture of mercury fulminate and potassium chlorate, the detonating compound which years of experience have proved to be consistently satisfactory. Blasting Caps must be stored in a dry place; they should be handled with extreme caution and kept away from high explosives until ready to use.

Packed in round tin boxes of 100 caps, 5 to 50 boxes in a case.

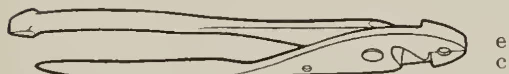
Per 1000 No. 6 Caps, Missouri and Arkansas..........	$15.45
Per 1000 No. 6 Caps, Kansas and Oklahoma	15.65

Discounts—F. O. B. nearest Magazine

BLASTING CAPS

Lots less than 1,000............................	List
Lots 1,000 to 5,000............................	5%
Lots 5,000 to 20,000............................	10%
Lots 20,000 or over............................	25%

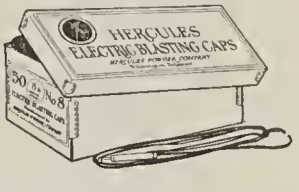
HERCULES COMBINATION CAP CRIMPER AND FUSE CUTTER



This crimper is equipped with a fuse cutter which cuts squarely across the fuse. A hole in handle provides means of fastening to belt by a ring or chain. The cap crimpers are strong, well made, and have a nickel-plated finish.

Per each	$0.75

HERCULES ELECTRIC BLASTING CAPS



Electric Blasting Caps are primarily caps with the addition of a delicate firing device. Hercules Electric Blasting Caps are made in two strengths, No. 6 and No. 8, containing respectively one and two grams of a fulminate chlorate mixture. The diameter of Hercules Electric Blasting Caps is larger than that of most other electric blasting caps, and the length is correspondinly shorter. Many advantages are secured by this improvement, among which are a better cap from a construction standpoint, a more concentrated and compact charge in a less elongated space, and more uniform construction of the delicate bridge parts. An advantage from a safety viewpoint is the shorter caps are less likely to protrude through the side of a cartridge, with the possible danger of exploding by impact with the sides of the bore hole during loading.

Hercules Electric Blasting Caps are made in standard lengths of 4 feet to 30 feet copper wires in 2 feet intervals; and with iron wires of 4 feet to 8 feet, in 2 feet intervals.

Price per 100

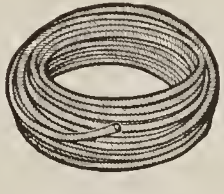
Missouri and Arkansas

Length of Wires ...	4′	6′	8′	10′	12′	16′	20′
No. 6...	$7.35	$8.15	$8.95	$9.75	$10.55	$12.15	$13.75
Kansas and Oklahoma							
No. 6...	7.40	8.20	9.00	9.80	10.60	12.20	13.80

Discounts—F. O. B. nearest Magazine

Lots less than 500............................	List
Lots 500 to 2,000............................	5%
Lots 2,000 to 5,000............................	10%
Lots 5,000 or over............................	25%

SAFETY FUSE



Safety Fuse consists of a small train or core of powder around which are wrapped layers of thread or tape, which is then coated with a waterproofing substance. The Hercules Powder Company does not manufacture safety fuse; they merely purchase and sell the various standard brands manufactured in this country. The Hercules Powder Company make no guarantee, expressed or implied, as to the burning speed of fuse. The manufacturers of safety fuse give an estimated burning speed for every brand.

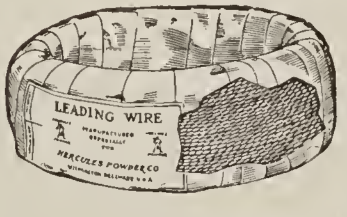
Charter Oak and Gray Charter Oak Brands, for use in wet work. A very good general purpose fuse..... Specify either White or Gray Charter Oak.	$6.65
Clover Brand, for use in very wet work..............	7.20
Crescent Brand, for use in very wet work............	7.80

From the list of prices shown above, the following discounts will apply on

Discounts—F. O. B. nearest Magazine

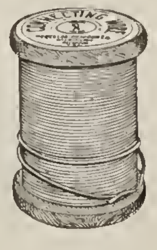
30,000 feet	12½%
6,000 feet	7½%
1,000 feet	2½%
Less than 1,000 feet............................	List

HERCULES LEADING WIRE



Leading wire is insulated copper wire of No. 14 B. and S. gauge for connecting electric firing devices to blasting machine or power circuit. It is furnished either as Single (1 wire) or Duplex (2 wires). Duplex consists of two of the single insulated wires bound together with an outer insulation.

HERCULES CONNECTING WIRE

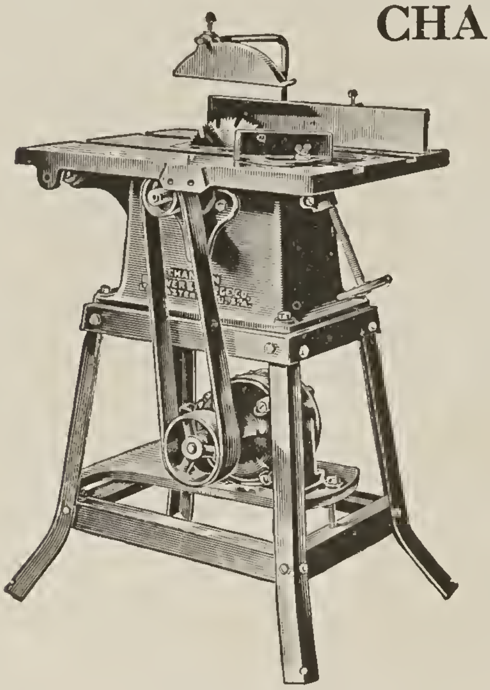


Connecting wire is insulated copper wire of No. 20 B. and S. gauge, for connecting ends of wires of electric blasting caps where such wires are too short to meet.

For Leading Wire and Connecting Wire ask for prices.

CHAMPION BENCH SAWS

Made in Three Sizes

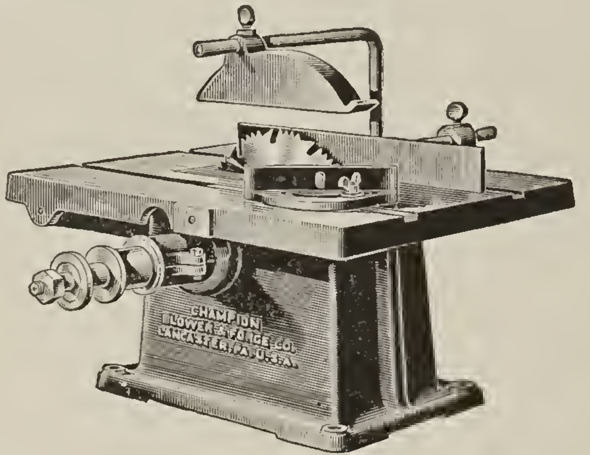


No. 10 Electric Saw Table on Steel Floor Stand with Motor and Motor Bracket

Champion Bench Saws furnish excellent means to rip, cross-cut, miter or groove without a heavy investment in equipment. Practical machine for contractors and for general woodwork and soft metal work.

TABLE—Tilts 45 degrees to right and 10 degrees to left.

BEARINGS—On the No. 8 and No. 10 are Annular Ball Bearings, insuring easy running and the most up-to-date construction possible.



No. 8 Bench Saw Table

All spindles are threaded on the pulley end to take a sand disc, grinder or buffing wheel, as regular equipment.

GAUGES—The ripping fence is surfaced smooth and square with the table. Cut-off or miter gauge slides in machined groove and is adjustable both ways to 45 degrees.

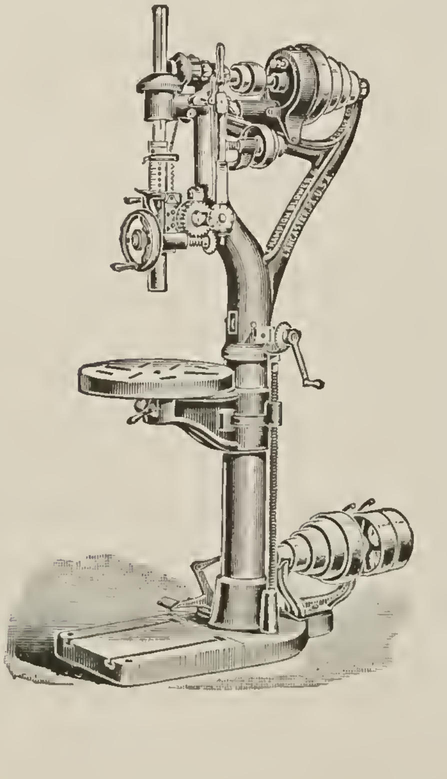
SPECIFICATIONS

	No. 8	No. 10
Table	12"x16"	20"x26"
Diameter of Saw	8"	10"
Hole in Saw	½"	¾"
Maximum Depth of Saw	2"	3"
Maximum Diam. Dado Head.	6" diam. x ¾"	8" diam. x 1"
Diameter of Pulley	1½"	2"
Width of Belt	1¼"	2"

	No. 8	No. 10
Speed of Saw	3500 R.P.M.	3500 R.P.M.
Height to Table Top	8"	11"
Size of Base	8"x12"	12"x16"
Shaft Diameter	¾"	1"
Weight	65 lbs.	185 lbs.
Table with ¼ H.P. Motor 110 Volt A.C. Weight	130 lbs.	
Table with ½ H.P. Motor 110 Volt A.C. Weight	170 lbs.	320 lbs.

Champion 20-Inch Double Back-Geared Upright Power Drill

Drills with accuracy from the smallest holes to 1½ inches. It has eight speeds with three complete feeds; power-feed, hand screw-feed and lever-feed. Has screw for raising and lowering the table.

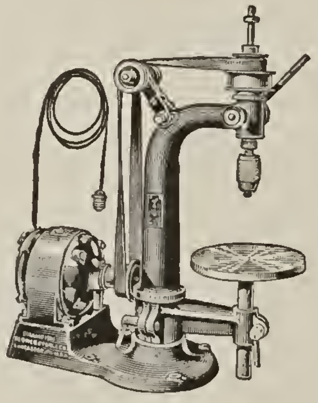


Crown Gear runs in a Phosphor Bronze Bushing and is equipped with an End Thrust Ball--Bearing, which eliminates the wearing of upper end of Crown Gear Bearing.

The dimensions are as follows: Drills to center of 20-inch circle. Spindle is 1-7/16 inches in diameter, with graduated sleeve, and is bored with No. 4 Morse Taper. Has four-step cone pulley carrying a 2 inch belt. The pulleys for driving the drill are 8x2½ inches. Pulleys should run at 300 R.P.M.

Square Base, Complete with Back Gears, Lever Wheel and Power Feed. Weight 855 lbs.

Champion Motor-Driven Sensitive Bench Drill No. 50-E



Furnished complete with Motor, Switch, Attachment Cord and Plug, Belt, and Champion Three-Jaw Chuck to take straight-shank drills from 0 to ½ inch.

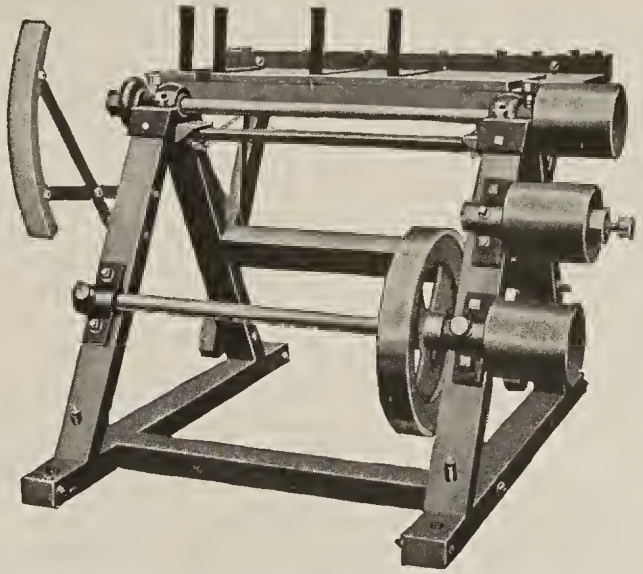
SPECIFICATIONS

Table swings 180 degrees horizontally.
Spindle Speed 900 R.P.M.-2100 R.P.M.
Adjustable Spindle Stop.
Greatest Distance from Spindle to Table 7¼".
Up and Down Movement of Spindle 2⅛".
Up and Down Movement of Table 5".
Diameter of Table 8".
Drills to center of 10½" circle.
Drilling Capacity ½".
Height Overall 26".
Weight 105 lbs.
Floor Pedestal No. 50E Drill; Height 26", weight 50 lbs.

No. 702 With Flywheel Beneath

Flywheel entirely out of the way on this Frame —suitable for sawing long poles without any interference—Right or Left Hand. Mandrel is of cold rolled steel, diam. 1 7/16″, 49″ long and turned for saw with hole 1 3/8″ diam. Machined flywheel is accurately balanced, 15½″ diam., weight 65 lbs. (95 lbs. flywheel can be furnished at slight additional cost). Standard pulley size 6 x 6″. Furnished with the Self-Aligning Bearings which are lubricated thoroughly by hard oilers. The inner sleeves are lined with a high grade of babbitt. Wooden parts are from finest stock that can be secured, securely bolted together for strength and durability. Has 4 pole guides and special saw guard for safety. This is an unusually well made, fine finished frame.

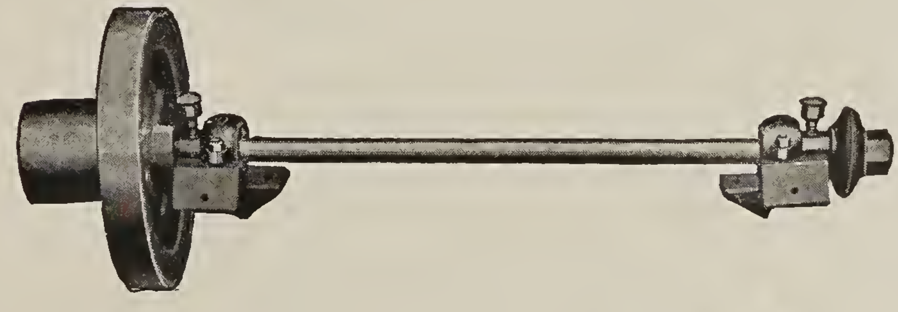
Shipping weight complete, 375 lbs.



IMPORTANT—For use with automobile, tractor, engine or thresher belt we can furnish 10 x 8″ Pulley in place of the Flywheel and 6 x 6″ Pulley

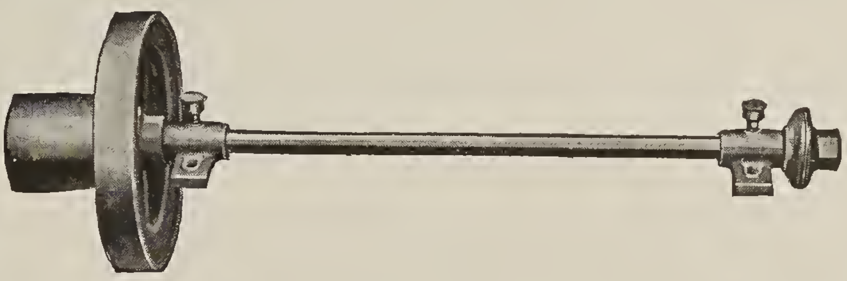
Mandrel Sets that are Trouble Free

These strong, sturdy mandrel sets are furnished either with Self-Aligning Bearings or with plain flat boxes. We recommend the Self-Aligning Bearings where mandrel is mounted on regular saw frame. Flat box type is handier for mounting on flat top frames or portable trucks.



No. 1 Mandrel—made from finest cold rolled steel, 1 7/16″ diam., 49″ long (shown opposite). Has Self-Aligning Bearings lubricated with hard oilers. The inner sleeves are lined with a high grade of babbitt. Furnished with machined flywheel, 15½″ diam., weight 65 lbs., 6 x 6″ pulley, and is turned for saw with 1 3/8″ hole. Comes equipped complete with saw collars, nut and keys.

No. 2 Mandrel—of cold rolled steel, 1 7/16″ diam., 49″ long (shown opposite). Has plain flat boxes with hard oilers; machined flywheel, 15½″ diam., weight diam., weight 65 lbs.; 6 x 6″ pulley; turned for saw with 1 3/8″ hole. Furnished complete with saw collars, nuts and keys.



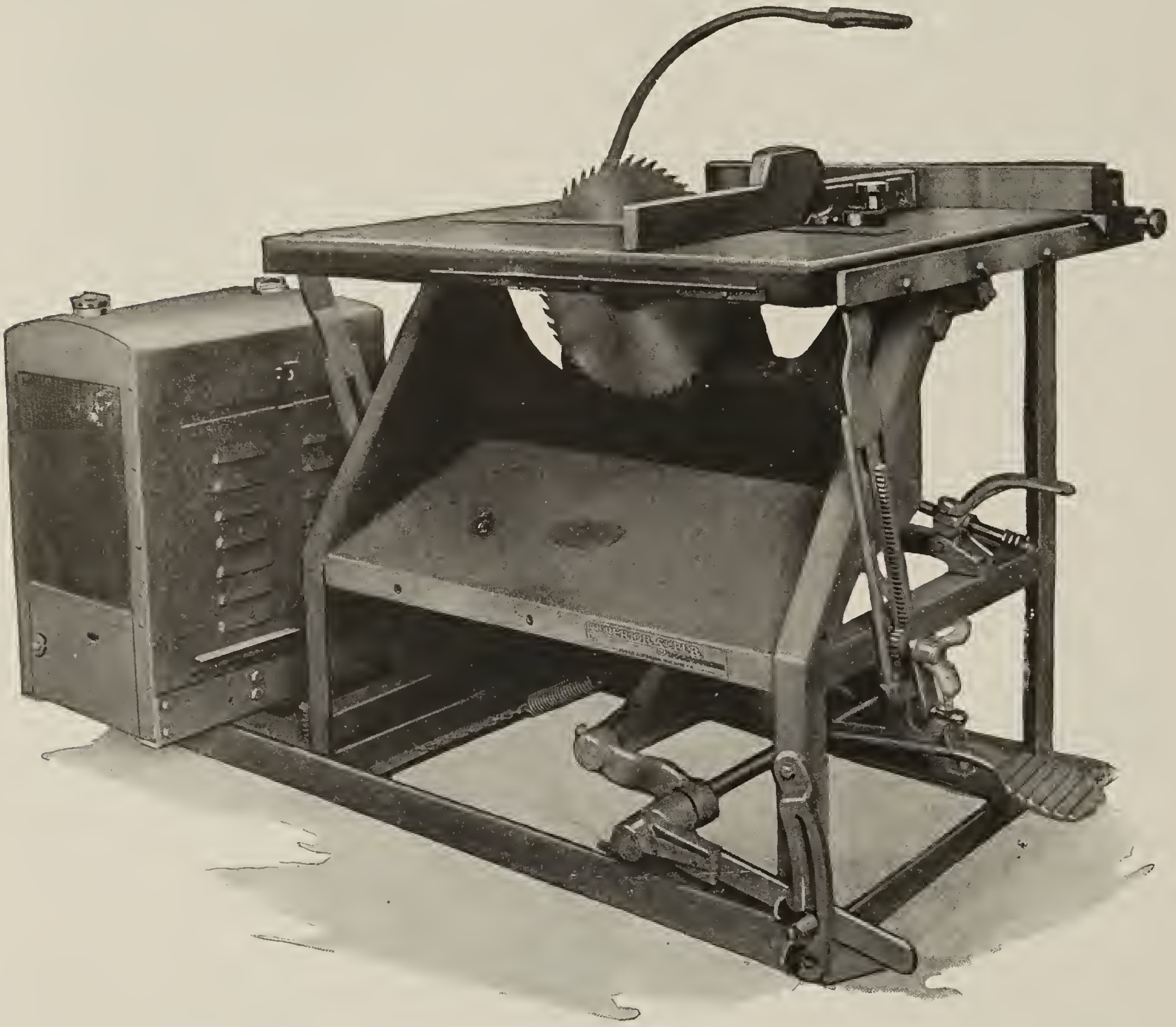
Flat Table Saw Frame No. 704

This is a combination cut-off and mitre saw. No workshop is complete without it. This outfit was designed especially for the every day needs of carpenters, farmers and contractors. The top of the saw being hinged at one end can be adjusted up or down, as desired. The table is provided with two adjustable guides—one for ripping, the other for cut-off or mitre work.

This saw table is built to swing a 10″ blade. This is a special blade designed for either cut-off or ripping. The table top is 40″ x 28″ and is 38″ high. It is equipped with a 4″ x 4″ pulley. A speed of 2000 R. P. M. is recommended for best results. Shipping weight, 165 lbs.

THE SUPER WOODWORKER

Manufactured by Jones Superior Machine Co., Chicago, Ill.



A Combined Cut Off and Rip Saw Equipped with Swinging Arbor and Tilting Table

The Super Woodworker is a combined cut off and rip saw equipped with swinging arbor and tilting table. The saw blade may be clamped stationary in any position for ripping and is easily raised or lowered to get the correct depth of cut. The tilting table makes bevel ripping and double mitre cuts an easy accomplishment.

The machine is made of steel throughout, combining light weight with great strength. All moving parts are mounted on Timken Roller Bearings. We use the Alemite system of lubrication which insures long life with minimum attention.

We can furnish the Super Woodworker with a wide variety of power units, 2 cylinder, 8 horsepower or 4 cylinder, 11 horsepower gasoline engines, or 5 or 10 horsepower electric motors. Power units are mounted on extended skids at rear of frame away from saw dust. A special spring base is mounted under the engine eliminating vibration.

THE SUPER WOODWORKER

Manufactured by Jones Superior Machine Co., Chicago, Ill.

TABLE. The table on the Super Woodworker may be tilted sideways to an angle of 45°—this makes bevel ripping and double mitre cuts an easy accomplishment. This table, made from steel has been Parkerized, making it rust proof.

ARBOR. This is of the swinging type with both a hand and foot lever to operate it. The arbor may be clamped stationary in any position for ripping and it can be easily raised or lowered to get the correct depth of cut.

BEARINGS. All moving parts on the Super Woodworker are mounted on Timken Roller Bearings and we use the Alemite system of lubrication. This insures long life with a minimum of attention.

SAWDUST PAN. We mount a special steel sawdust pan in the frame of the machine—this keeps all of the sawdust going out over the side rather than piling up inside the frame and a minimum of sawdust reaches the engine.

ATTACHMENTS. The Super Woodworker may be equipped with a six-inch ball bearing jointer, with table forty inches long, boring and hollow chisel mortising attachment, or twenty-inch band saw—this last attachment is very necessary when curved forms are to be cut. These attachments may be purchased with the machine or they may be mounted later as the frame of the machine is bored out to receive them.

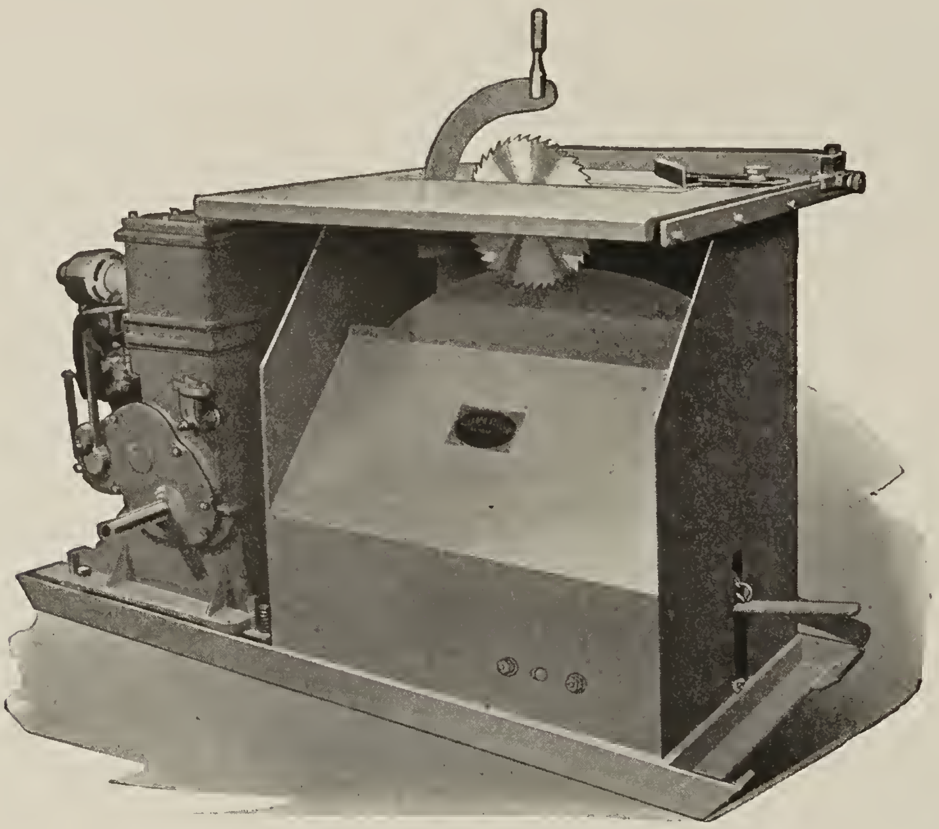
GENERAL. When equipped with a four cylinder engine the Super Woodworker will rip 2-inch lumber 60 feet per minute and better. Dado heads up to 1 inch wide can be mounted on the saw arbor so that grooving, notching, rabbetting, etc., can easily be accomplished.

Detail Specifications

Size of Table	36 in. x 46 in.
Height from Floor to Top of Table	37 in.
Size of Saw Arbor at Saw End	1 in.
Size of Arbor Pulley	4 in. x 3¾ in.
Bearings	Timken
Lubrication	Alemite
Largest Diameter Saw That Can Be Used	16 in.
Will Cut Off	5 in. x 5 in.; 4 in. x 8 in.; 3 in. x 12 in.; 1 in. x 16 in.
Maximum Width Ripped with Gauge	17 in.
Speed of Saw Arbor	2200 R.P.M.
Horsepower	8 to 12
Floor Space	36 in. x 78 in.
Net Weight of Machine	600 lbs.
Shipping Weight of Machine Alone	650 lbs.
Shipping Weight of Machine with Engine	1100 lbs.

THE SPEEDSTER

Manufactured by Jones Superior Machine, Co., Chicago, Ill.



SPEEDSTER Arranged for Gasoline Engine Drive

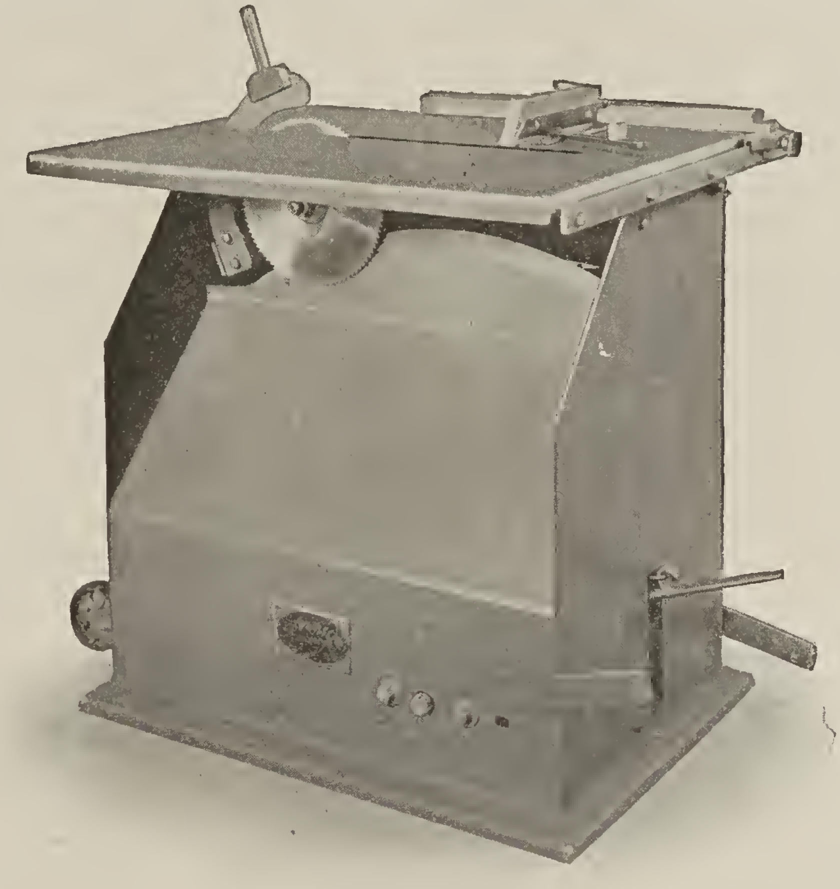
The Speedster is somewhat smaller than the Super Woodworker but has the same general features in that it is equipped with swinging arbor and tilting table. This is the ideal machine for the builder putting up residences or apartments because it is light in weight yet sturdy enough to stand rough handling.

The cut shows the machine equipped with a four horsepower hopper cooled gasoline engine. So equipped the Speedster will rip 2-inch lumber 30 feet per minute. When powered w.th a 6 horsepower engine the machine will rip 2-inch lumber, 40 feet per minute. We can also furnish the Speedster with a 2 horsepower air cooled engine or with electric motors from ½ to 3 horsepower.

The Speedster will accomplish cross cutting, ripping, bevel ripping, mitreing, double mitreing, dadoing, grooving, rabbeting, tenoning, etc. Changing from one operation to another is a matter of but a few seconds and it is not necessary to have a skilled operator to secure good results.

THE SPEEDSTER

Manufactured by Jones Superior Machine Co., Chicago, Ill.



SPEEDSTER Arranged for Electric Motor Drive.

The machine is equipped with a 10-inch combination saw blade. This eliminates the changing of blades when changing from cross cutting to ripping. A 12-inch blade can be furnished at a small additional cost.

The 10-inch blade protrudes through table more than 3 inches and will cut off 3 x 6, 2 x 10, 1 x 12.

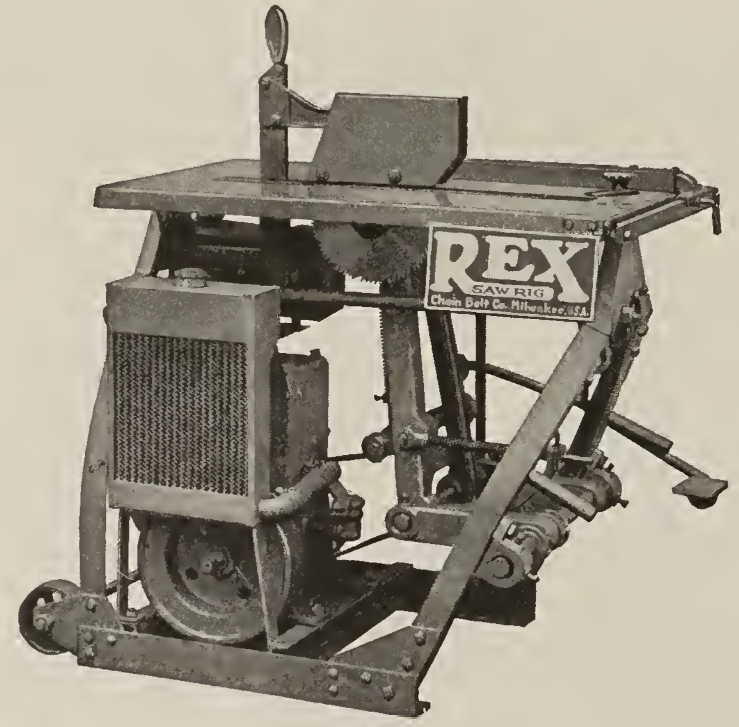
Standard equipment includes ripping gauge, swivel cross cut gauge, wood throat piece, belt, splitter guard which also acts as handle to pull saw through work and 10-inch combination saw. When machine is ordered with electric motor we also furnish switch and ten feet of cord.

Detail Specifications

Size of Table	24 in. x 32 in.
Height from Floor to Top of Table	34 in.
Size of Saw Arbor at Saw End	¾ in.
Size of Arbor Pulley	2½ in.
Largest Diameter Saw That Can Be Used	12 in.
12-inch Saw Projects Through Table	4 in.
Will Cut Off	4 in. x 4 in.; 4 in. x 6 in.; 2 in. x 10 in.; 1 in. x 12 in.
Maximum Width Ripped with Gauge	12 in.
Speed of Saw Arbor	4500 R.P.M.
Horsepower	½ to 6 H.P.
Floor Space	30 in. x 38 in.
Weight of Machine with Electric Motor	300 lbs.
Weight of Machine with Gas Engine	500 lbs.

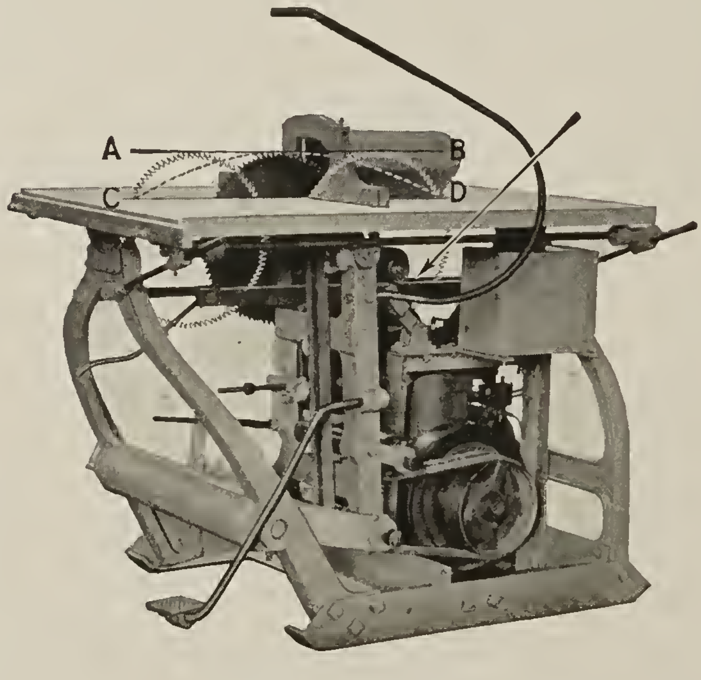
REX SAW RIG

Made by Chain Belt Company, Milwaukee.



No. 3 REX TILTING TABLE SAW

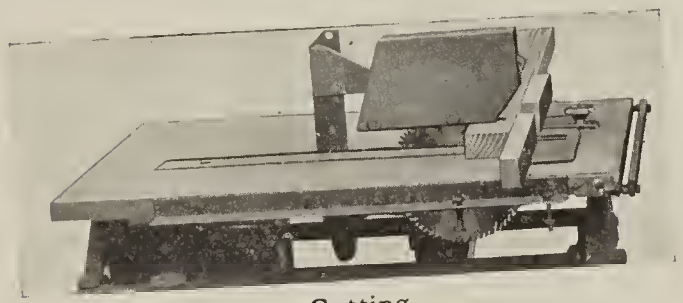
These are compact sturdy machines that can be moved anywhere. The frame is cut under to permit the operator to stand in an easy, natural position when working over the table. The gasoline engine is placed under the table allowing the saw rig to get into closer quarters than would otherwise be possible. But the big features of all Rex Saw Rigs are the straight-line cutoff and the tilting table. This straight-line cutoff refinement means that the saw has the same cutting capacity thruout its entire stroke. Double mitre cuts, bevel ripping, and bevel cross cuts can be made easily and safely on the tilting table. All Rex Saw Rigs are furnished with a gas engine but an electric motor or a counter shaft with a tight and loose pulley can be mounted in place of the radiator cooled engine. These saw rigs take up approximately 38 inches x 51 inches. The size of the table itself is 31 inches x 50 inches. The saw blade has a diameter of 16 inches and will cut 5 inches x 10 inches — 4 inches x 12 inches and 2 inches x 14 inches.



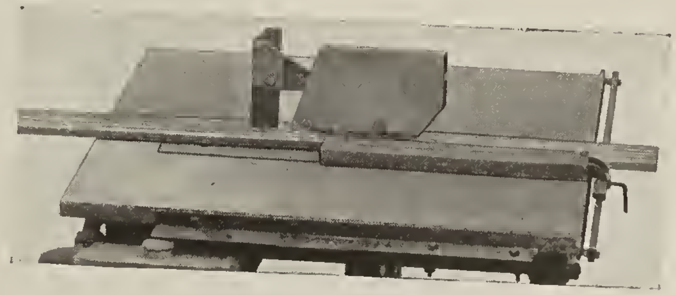
Rex No. 5 Saw Rig

REX SAW RIG

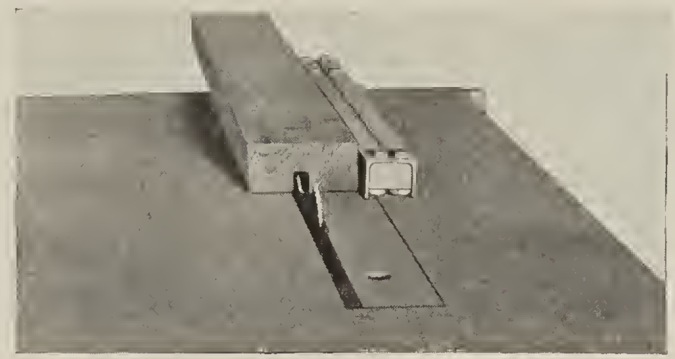
Made by Chain Belt Company, Milwaukee.



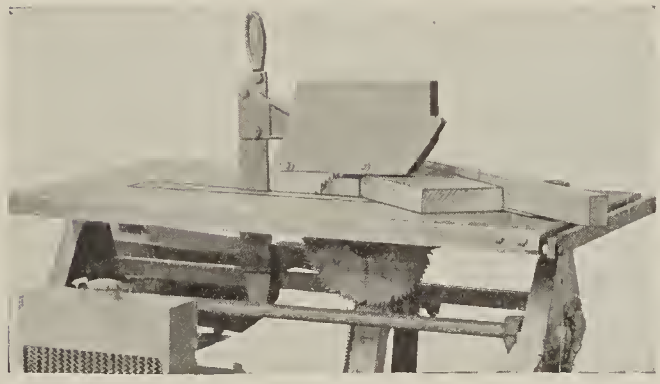
Cross Cutting



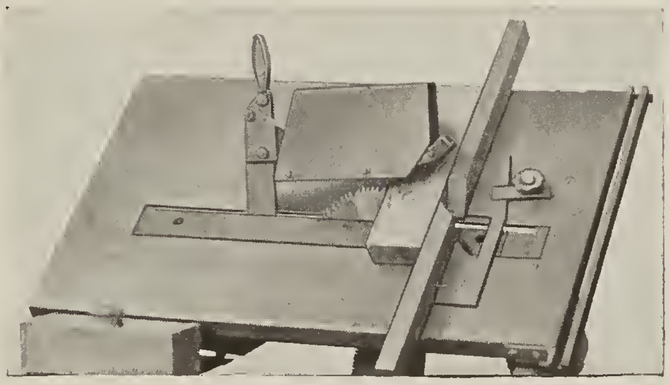
Ripping



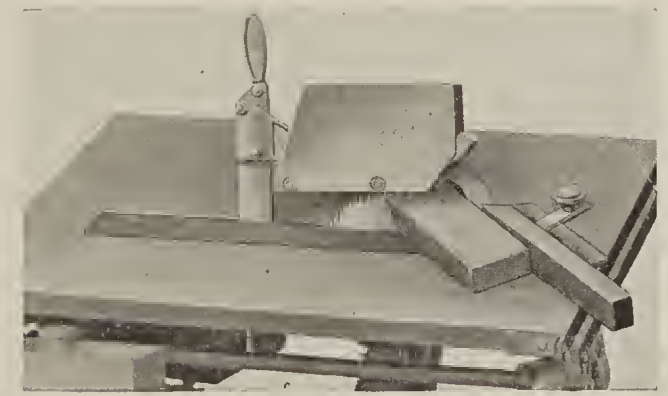
Dadoing



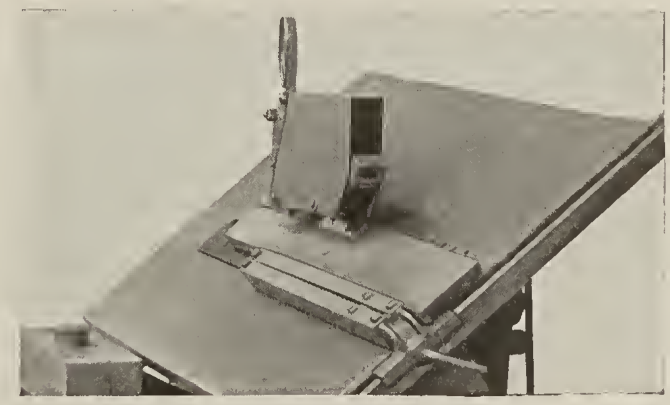
Mitre



Bevel Cross Cut



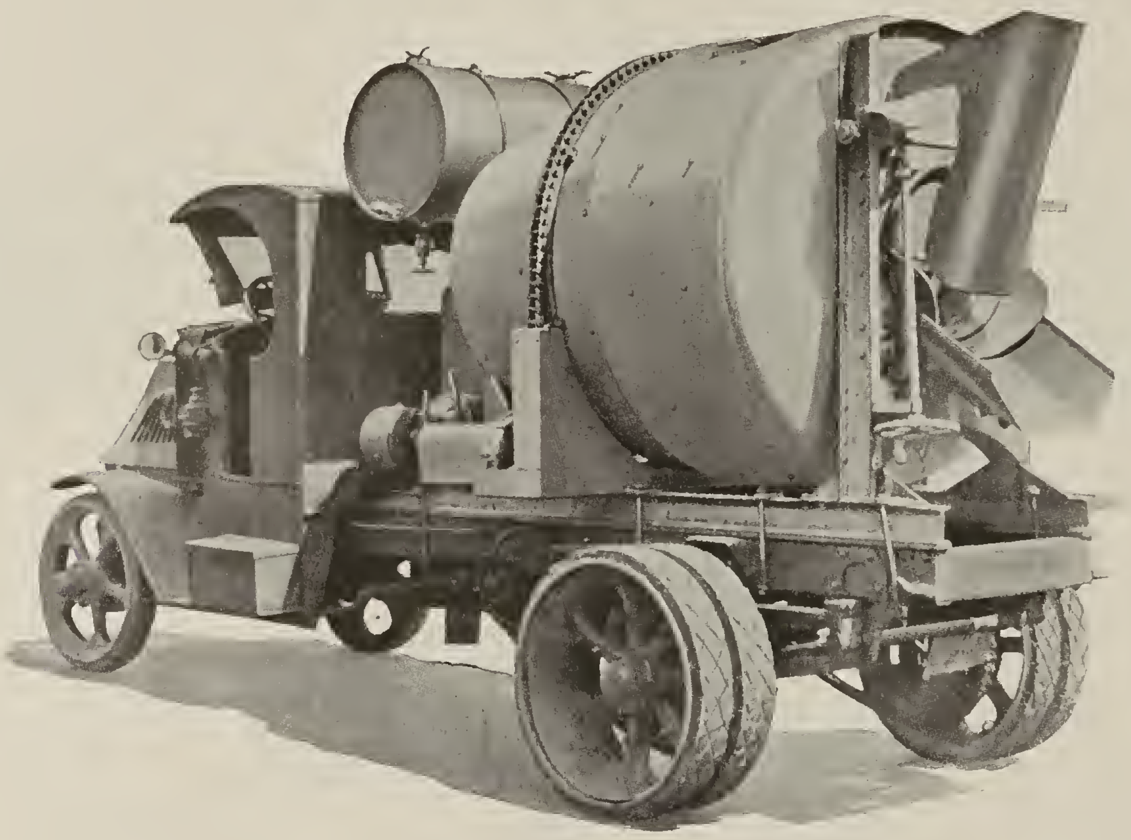
Double Mitre
(Jack Rafter)



Bevel Rip

ALL THESE CUTS WITH A REX

MIX-HAUL TRUCK MIXERS.

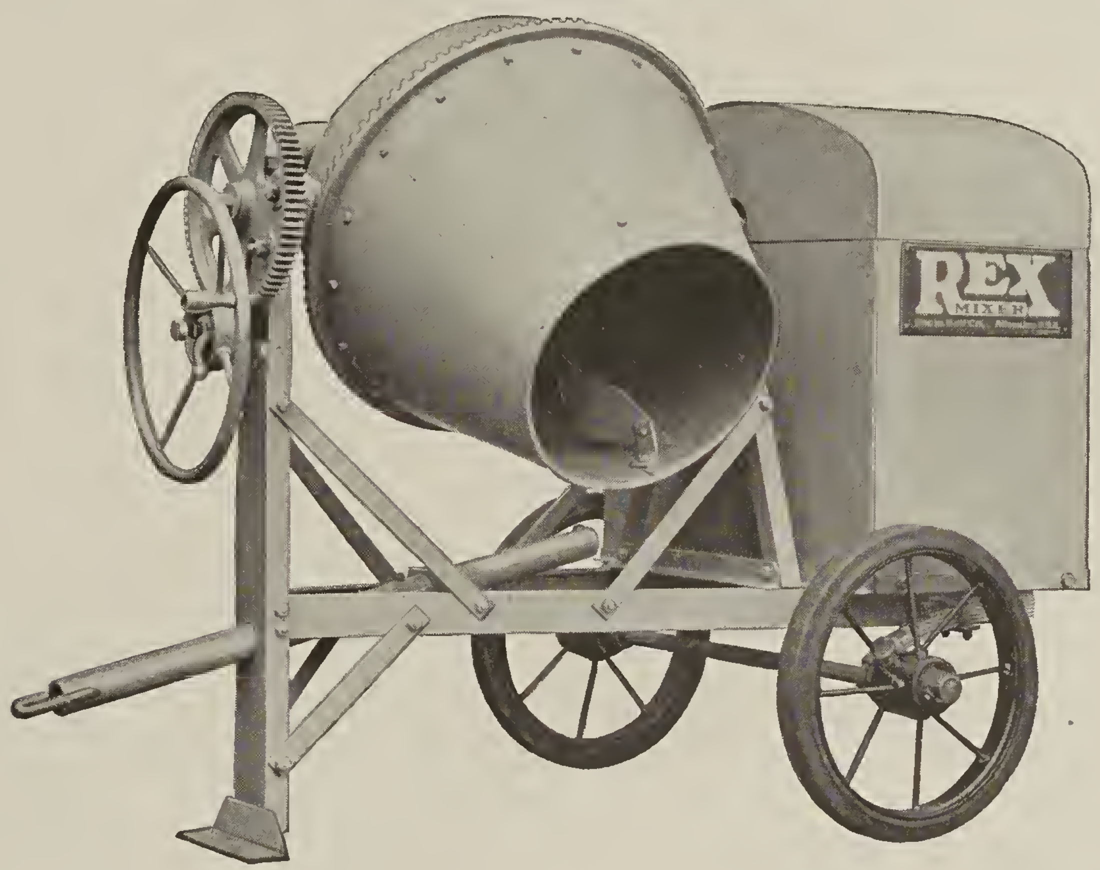


Write us for complete information on Mix-Haul Concrete Mixers for handling pre-mixed concrete on any job. These two views show the truck mixer which is becoming one of the popular methods of handling concrete on all classes of jobs.

We will gladly have our engineers go over your problems and make recommendations when you are ready to install this newest equipment for handling your concrete work.

REX MIXERS

Made by Chain Belt Company, Milwaukee.



A FAST HALF BAG TILTER FOR ANYTHING UP TO 40 YARDS PER DAY

From the ground up this half-bag mixer is built for big league mixing. It handles a full half-bag batch on any mix — and handles it faster. It's built for speed and for long life — to cut the cost of each yard of concrete it mixes.

Large hand wheel and geared reduction make the Rex Tilter easy to operate.

Automotive type springs take up the shocks and jars of traveling over rough roads.

Timken bearings in the drum spindle mean smooth running, less power consumption, and longer life for the mixer.

Towing tongue can be pushed under the machine out of the way of workmen.

A 2 H.P. fully enclosed horizontal engine — bore 3½″ — stroke 5″ — R.P.M. 600 — high tension magneto.

Correct charging and discharging heights. Mixing drum will clear all commonly used wheelbarrows.

Dependable Rex Genuine Griplock Chain Drive.

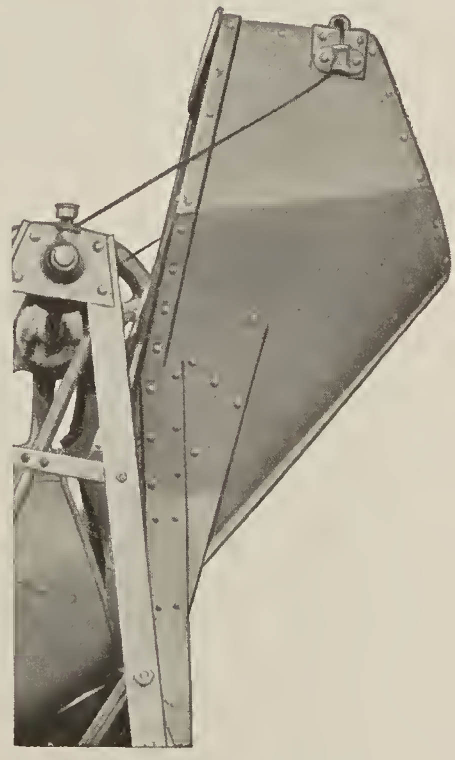
Locking device on the handwheel holds the drum in any desired position.

Semi-steel drum bowl and cradle.

3½ foot capacity will turn out up to 40 yards per day.

Standard Equipment: Two steel road wheels; cantilever on axles; 2 H.P. engine; disappearing towing tongue.

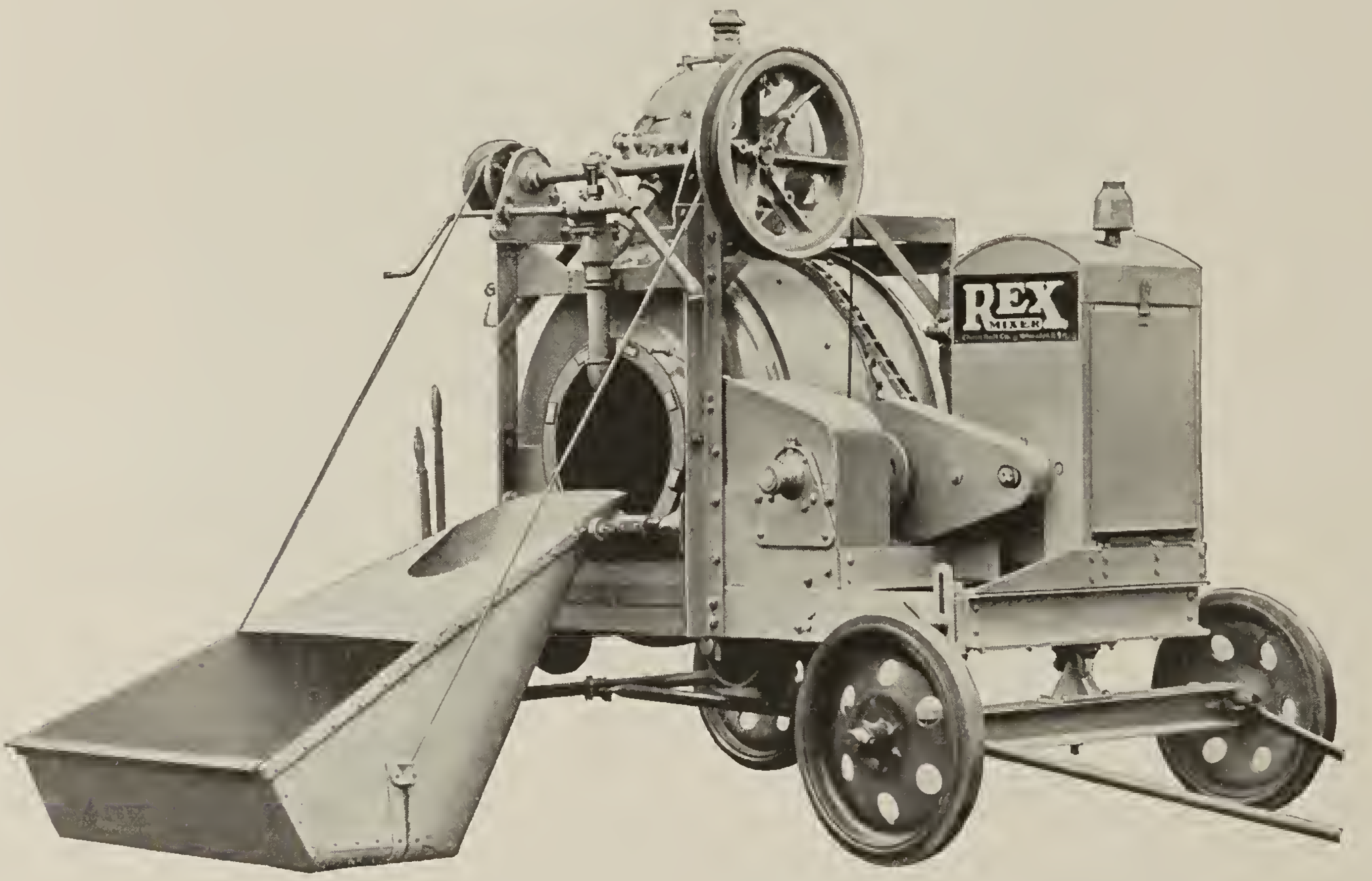
Optional Equipment: Rubber tired road wheels.



This new Rex Tilter with power loader sets a new and higher standard of design and construction in small concrete mixer machinery.

REX MIXERS

Made by Chain Belt Company, Milwaukee.



The New REX 5-S with End Controls and the Shimmy Skip

The new Rex 5-S Mixer, a real non-tilting mixer built along the same lines as the 7-S and 10-S — but designed to sell in competition to 5-S tilters — with a unit power plant, end controls, Shimmy Skip, 500 pounds less weight, a real performer. Check these features against any 5-S mixer on the market —

Shimmy Skip: A patented feature of Rex Mixers that vibrates every speck of the aggregates into the drum.

End Controls: All of the operating levers located on one end of the mixer, all operations are under the control and in the view of one man.

Unit Power Plant: One compact assembly — silent chain drive—less weight—less power loss—no out-of-alignment.

Skip knockout — automatic.

High speed charging skip.

High speed Discharge.

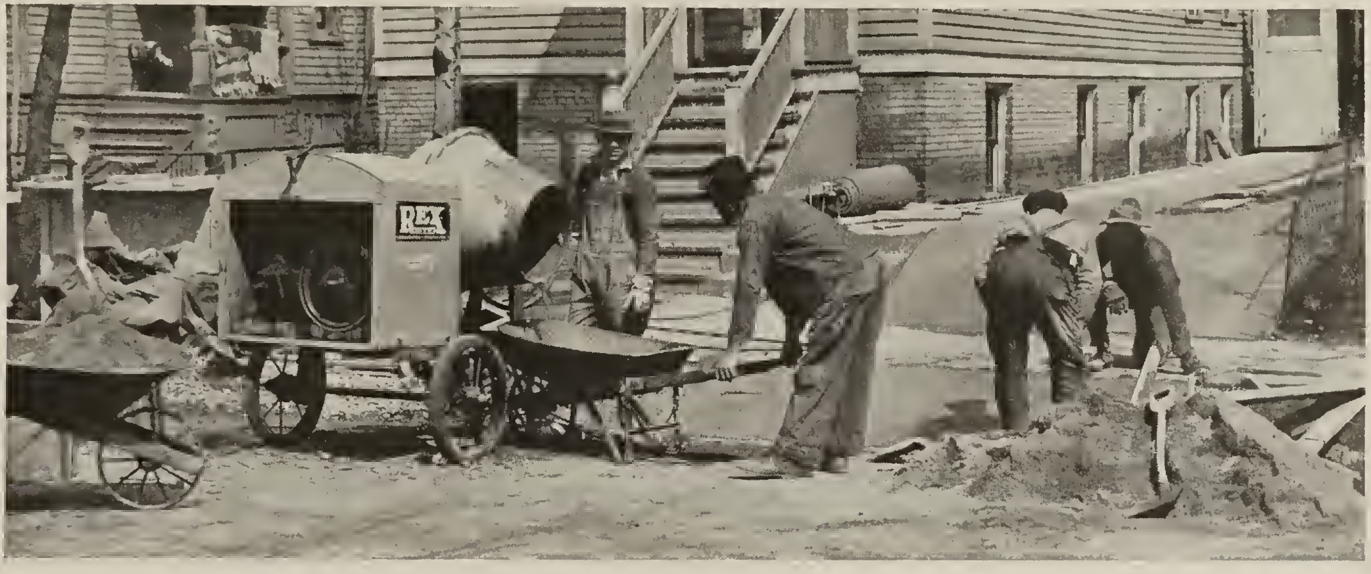
High carbon pressed steel drum rollers.

No-leak water system.

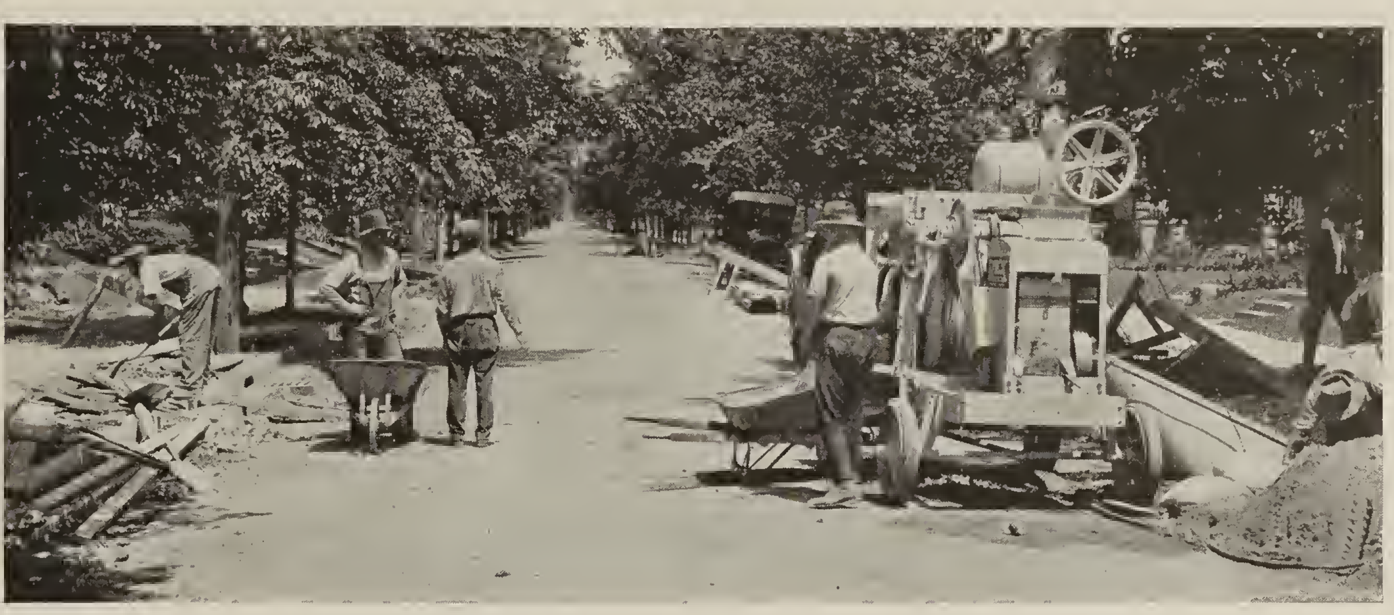
All these features — many of them exclusively Rex — and for this year the prices are down to what you would expect to pay for a tilting mixer of the same size.

Standard Equipment: Steel frame on trucks; steel road wheels; low charging hopper or power charging skip; five horsepower gasoline engine; steel towing tongue; genuine Rex Chabelco steel chain; end controls; Rex Shimmy Skip.

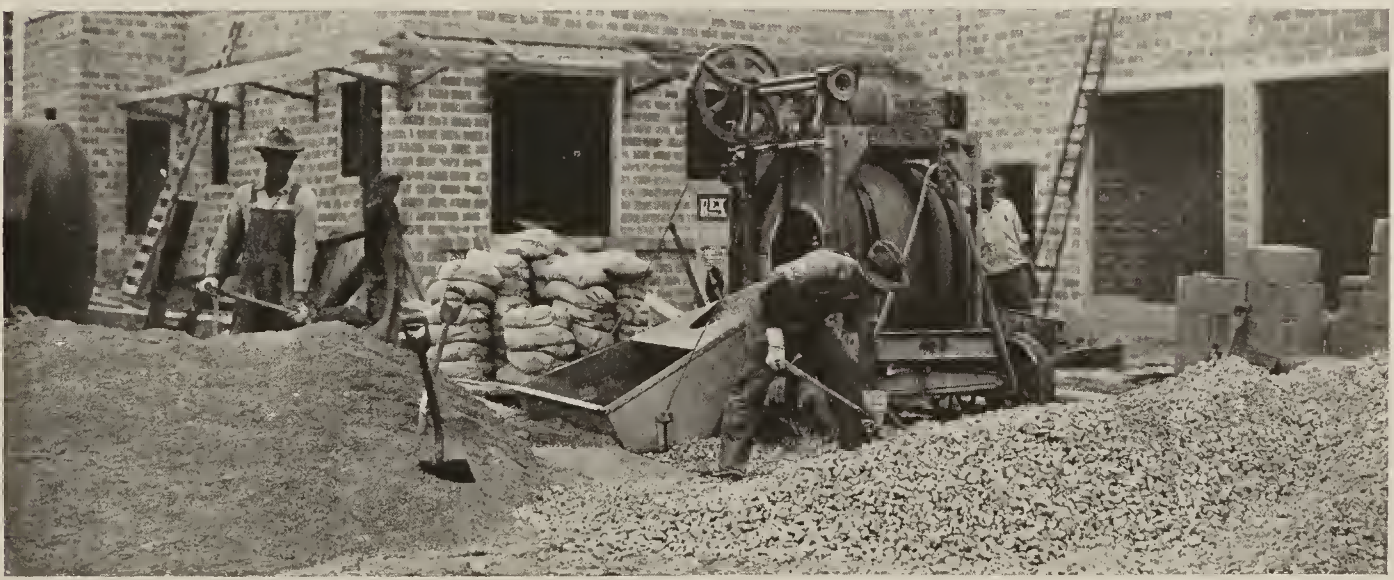
Optional Equipment: Rubber tired disc road wheels; folding platform; batch hopper; automatic water tank; electric motor gearing; pivot type distributing spout.



Rex 3½-S Tilting Type Mixer, capacity ½ bag, laying a driveway to a private garage.



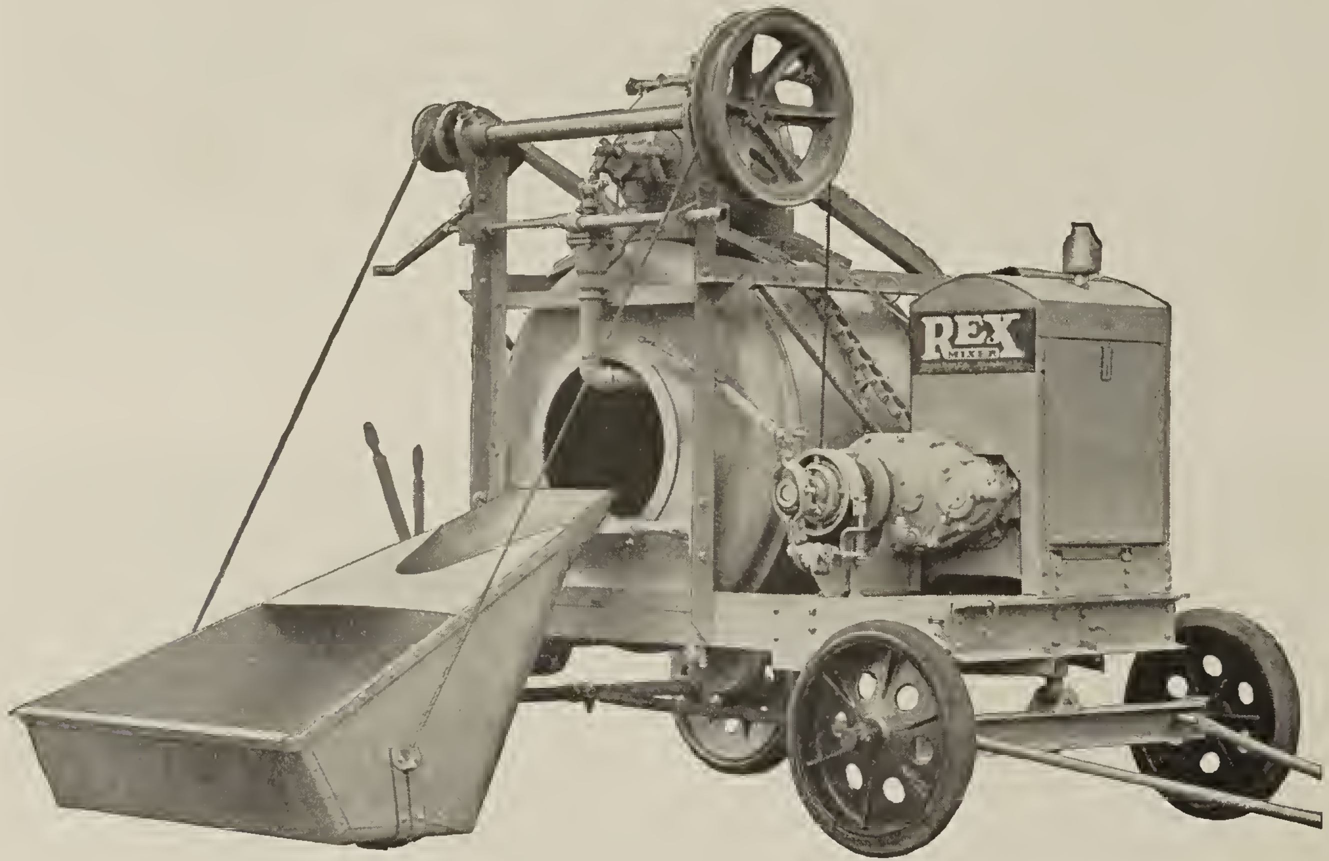
A ½ to 1 bag Rex 5-S, mixing concrete for curb and gutter work, sidewalks and city sewers.



Full bag Rex 7-S working on an Oil Supply Station. Contract calls for 45,000 square yards of concrete.

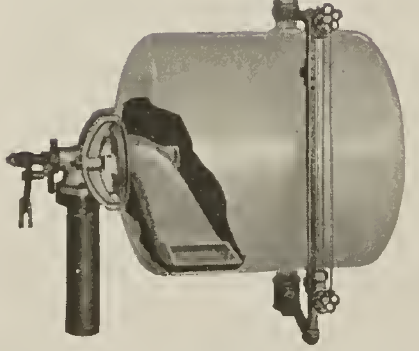
REX MIXERS

Made by Chain Belt Company, Milwaukee.



THE 7-S REX HIGH SPEED 1 BAG MIXER

The Rex 7-S is built to mix more yards per day. In addition it is designed and built for compactness and easy control that permits fast moving, quick placing, and ease of handling.



A new, faster, and even more accurate water system.

Rex Shimmy Skip.

One man end controls.

A fast seven second charging skip.

Fast, thorough mixing action.

Simple, durable trouble proof free way water valve.

6-8 H.P. two cylinder, hopper cooled LeRoi gas engine.

A husky frame and chassis construction that will withstand a lot of abuse.

An exceptionally fast discharge and a quick, easy-swinging chute.

Fast discharge allows the operator to raise the skip while the drum is discharging.

Rex Genuine All Steel Chain Drive.

Standard Equipment: Steel frame on trucks; steel road wheels; pressed steel drum heads; Rex Chain drive; gasoline engine; enclosed gear reduction; steel engine house; end control.

Optional Equipment: Power charging skip; automatic water tank; rubber tired disc road wheels; electric motor.

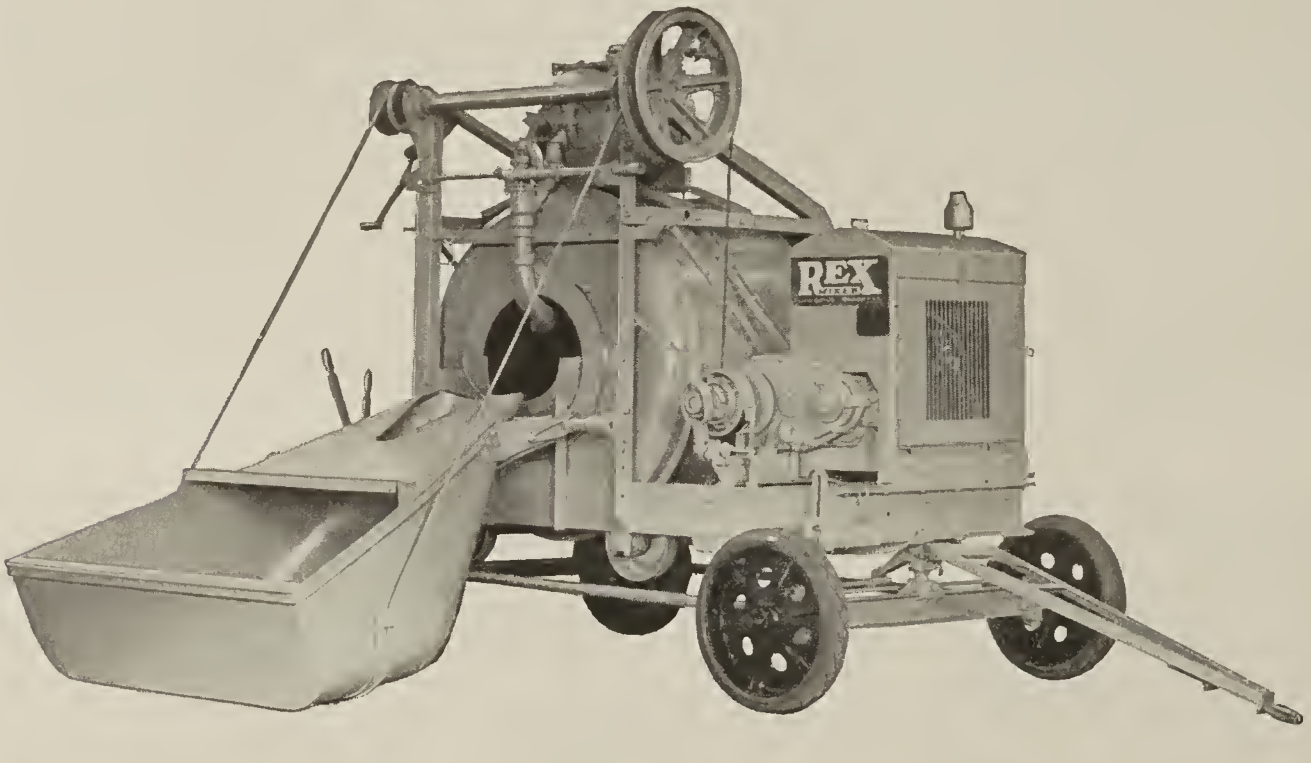
A Rex 7S Mixer pouring the foundation and first floor for a new studio in the middle west.

A 10S Rex Mixer pouring directly into the forms. The 10S is light in weight and easy to move about in close quarters.

Rex Truck Mounted Mixers are profit makers for the contractor. Faster mixing on a faster moving basis enables the contractor to cover the small jobs at a lower cost.

REX MIXERS

Made by Chain Belt Company, Milwaukee.



THE REX 2 BAG 10-S COMBINES CAPACITY AND PORTABILITY

It is a big capacity mixer having the mobility, speed and handling ease of a smaller machine.

It has the Rex Shimmy Skip — automatic, certain.

It is close-coupled to work and turn in tight corners.

It is a half ton lighter — yet unusually sturdy, and its automotive type of construction makes for easy portability.

Spring hung chassis — 3 Point suspension trailer type of steering mechanism.

Timken bearings in Drum Rollers.

A fast, accurate to the pound, water measuring system with a trouble-proof Freeway water valve control.

End Control — All control levers on the Rex 10-S are grouped for one man operation. Seven and one-half section charging skip.

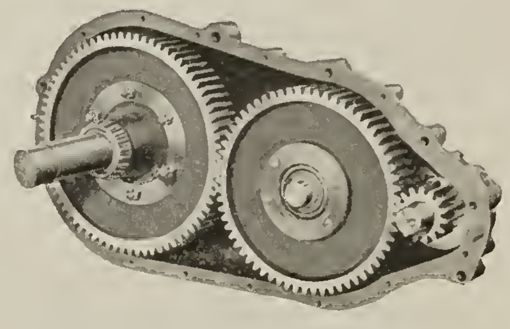
Four Cylinder — 10 to 12 H.P. Automotive Type LeRoi gas. engine

Rex Genuine Chabelco steel chain drive — smooth and flexible.

Alemite Lubrication.

A wide discharge chute swings far into the drum for fast discharging.

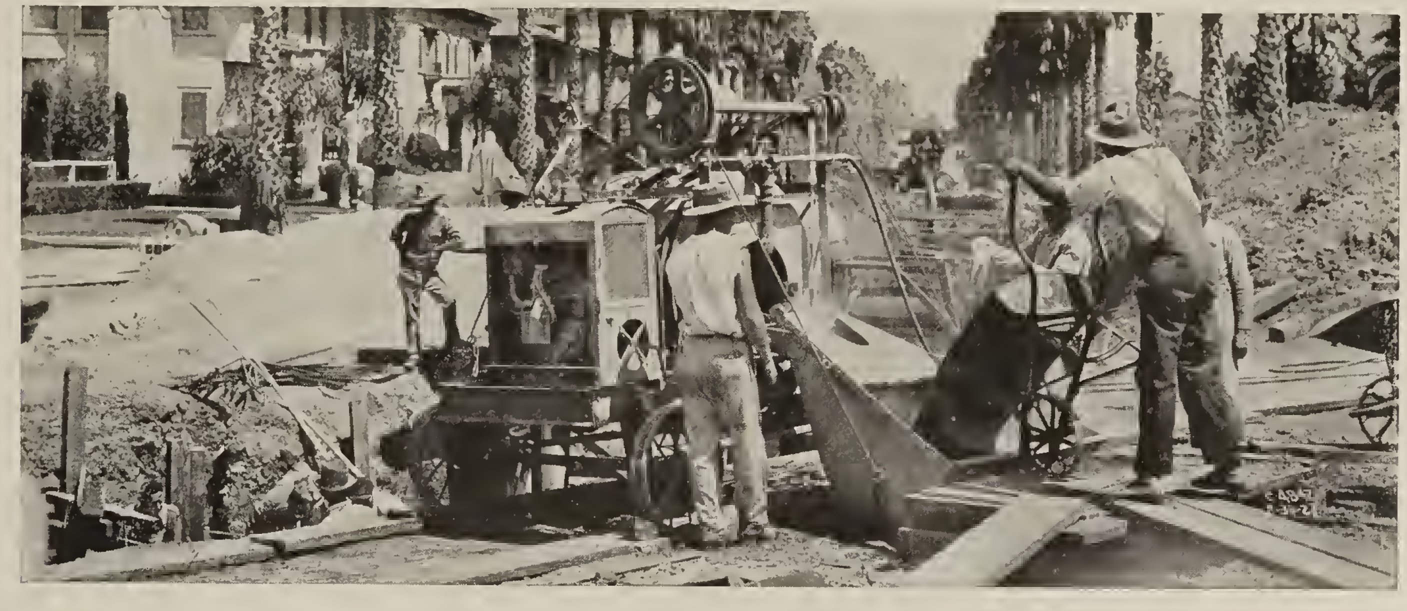
A full 2 bag capacity on a 1-2-5 mix.



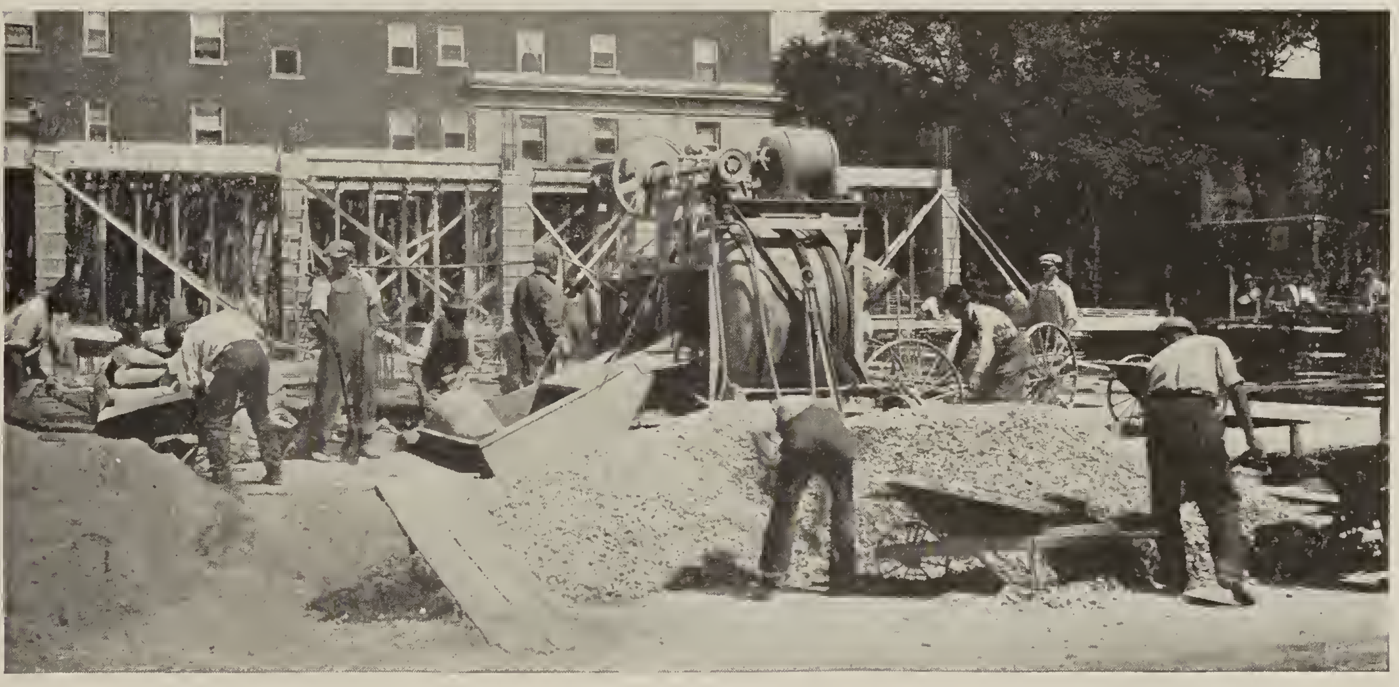
The power take-off on the Rex 10-S, consisting of heat treated cut gears, is enclosed in an oil tight case and operates in a bath of oil.

Standard Equipment: Steel frame on trucks; steel road wheels; pressed steel drum heads; Rex Chain drive; gasoline engine; enclosed gear reduction; steel engine house; end control.

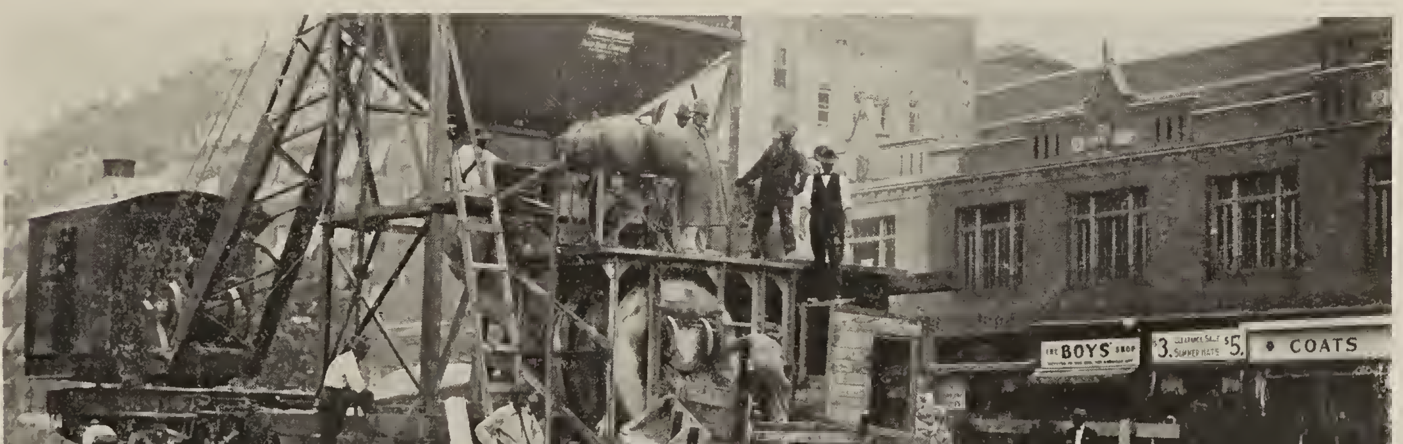
Optional Equipment: Power charging skip; automatic water tank; rubber tired disc road wheels; electric motor.



A Rex 10-S Mixer working on the Los Angeles City Sewer job, Los Angeles, California.



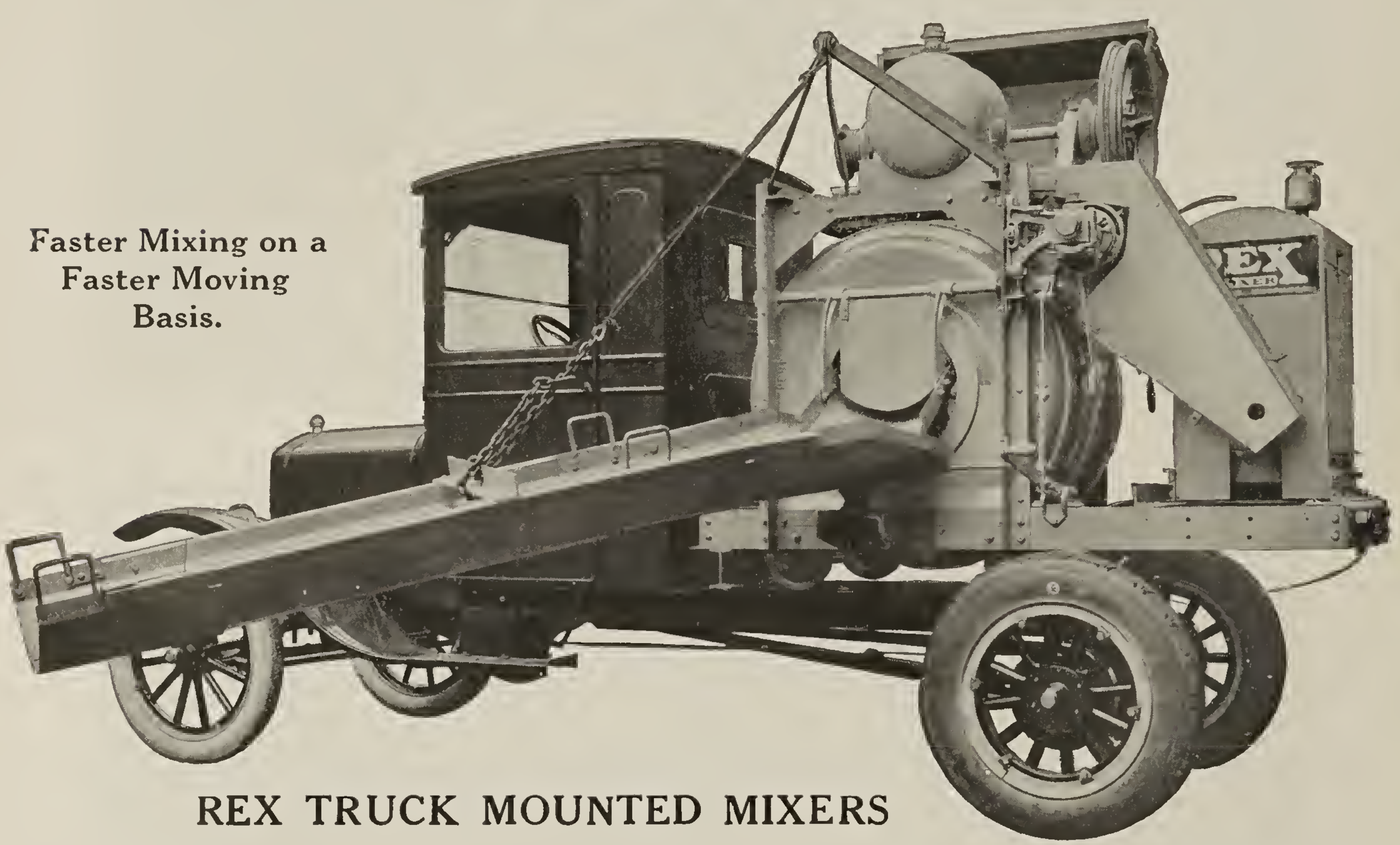
The two- to three-bag Rex 14-S working on a large apartment hotel in the Middle West.



A 6-bag Rex 28-S Mixer, mixing and pouring a cubic yard of concrete a minute for a New York City Sewer Job.

REX MIXERS

Made by Chain Belt Company, Milwaukee.



Faster Mixing on a Faster Moving Basis.

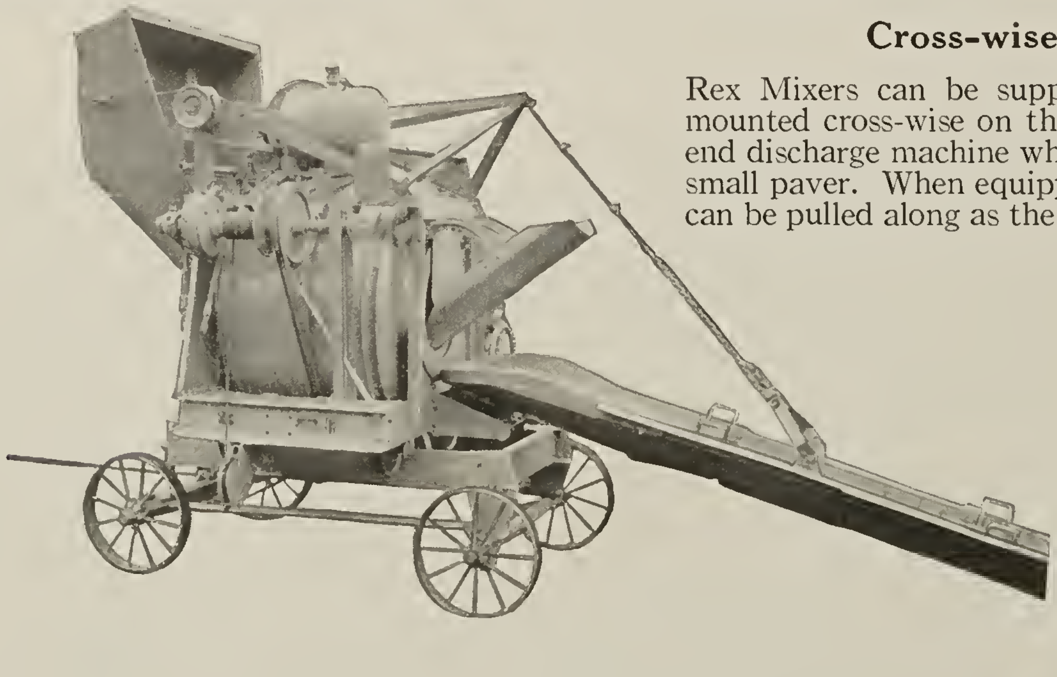
REX TRUCK MOUNTED MIXERS

The Rex Truck Mounted Mixer is built for special jobs requiring extreme portability, and is of special value on sidewalks, alleys, curbs and gutters, as the mixed batch can be spouted directly into the forms, and the mixer can be moved along as the job progresses.

Rex Mixers are not built into any truck, but may be mounted and dismounted at any time, making your truck available for hauling. You have the choice of two fast and popular machines for truck mounting — the Rex 5-S or the Rex 7-S.

Cross-wise Axles

Rex Mixers can be supplied with the mixer mounted cross-wise on the axles, providing an end discharge machine which may be used as a small paver. When equipped with a hoist they can be pulled along as the the job progresses.

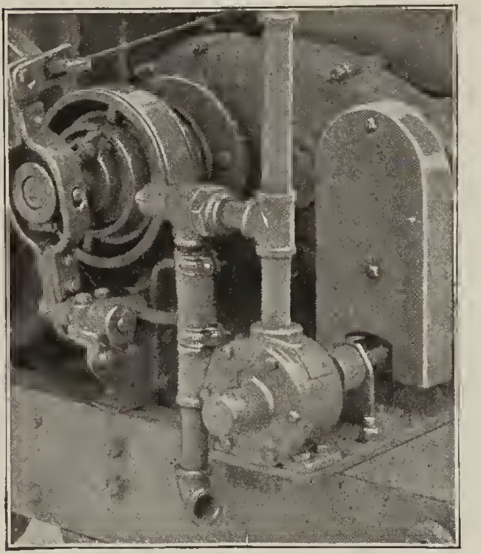


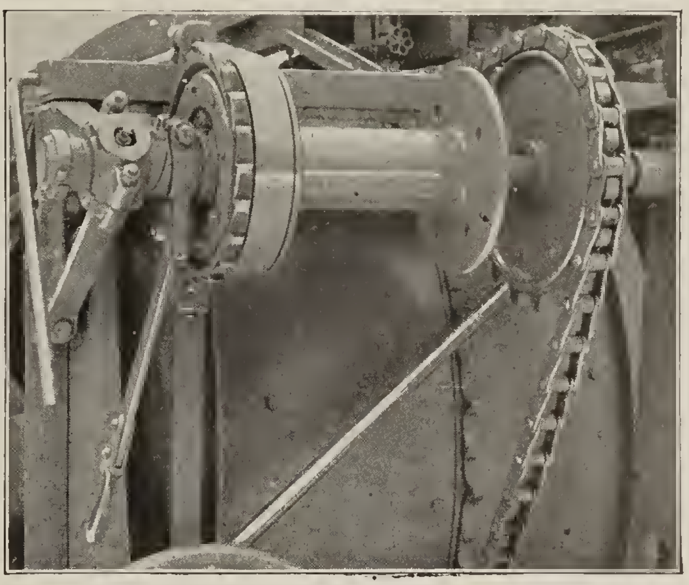
REX MIXERS

Made by Chain Belt Company, Milwaukee.

Water Pump

Where water pressure is not available the Rex Water Pump takes care of the needs of each batch. It is a big time and money saver to the contractor especially when working on new developments and sub-divisions where water pressure lines have not been laid. Power is supplied from the unit power plant, and the pump has a capacity of 20 gallons per minute.





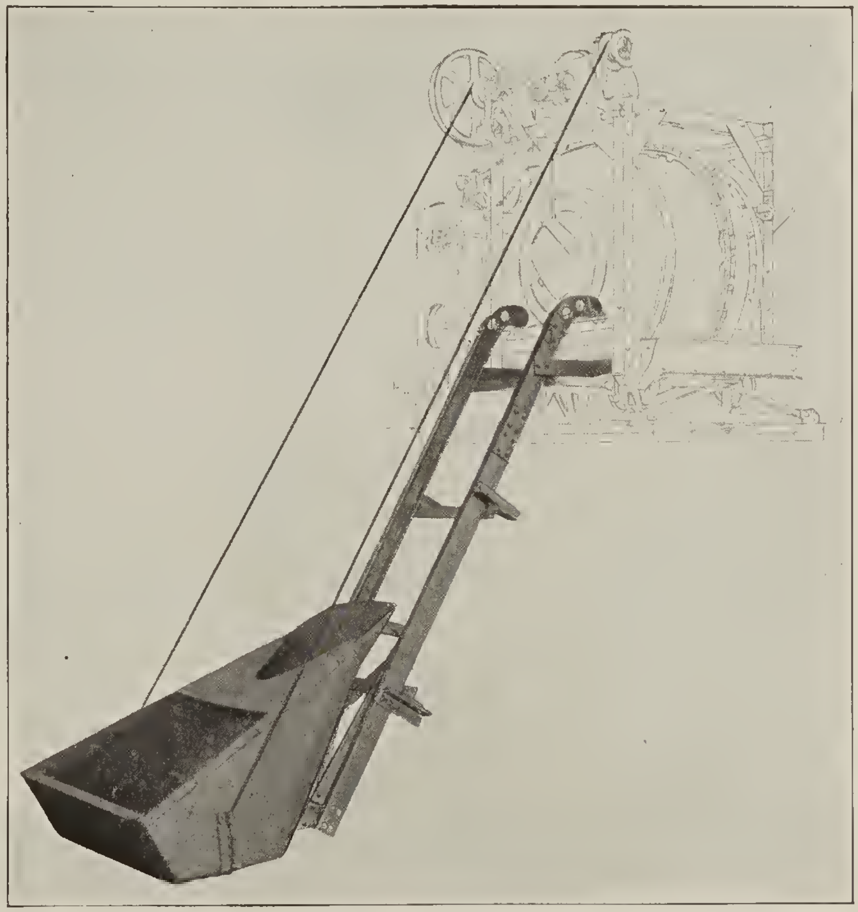
Hoist

To handle small elevators and similar jobs the Rex 10-S can be equipped with this hoist, driven by the drum drive chain.

Capacities are 700 pounds at 80 ft. p. m. on single line — 1200 pounds at 40 ft. p. m. on double line. Carries 400 feet of 5/16″ cable.

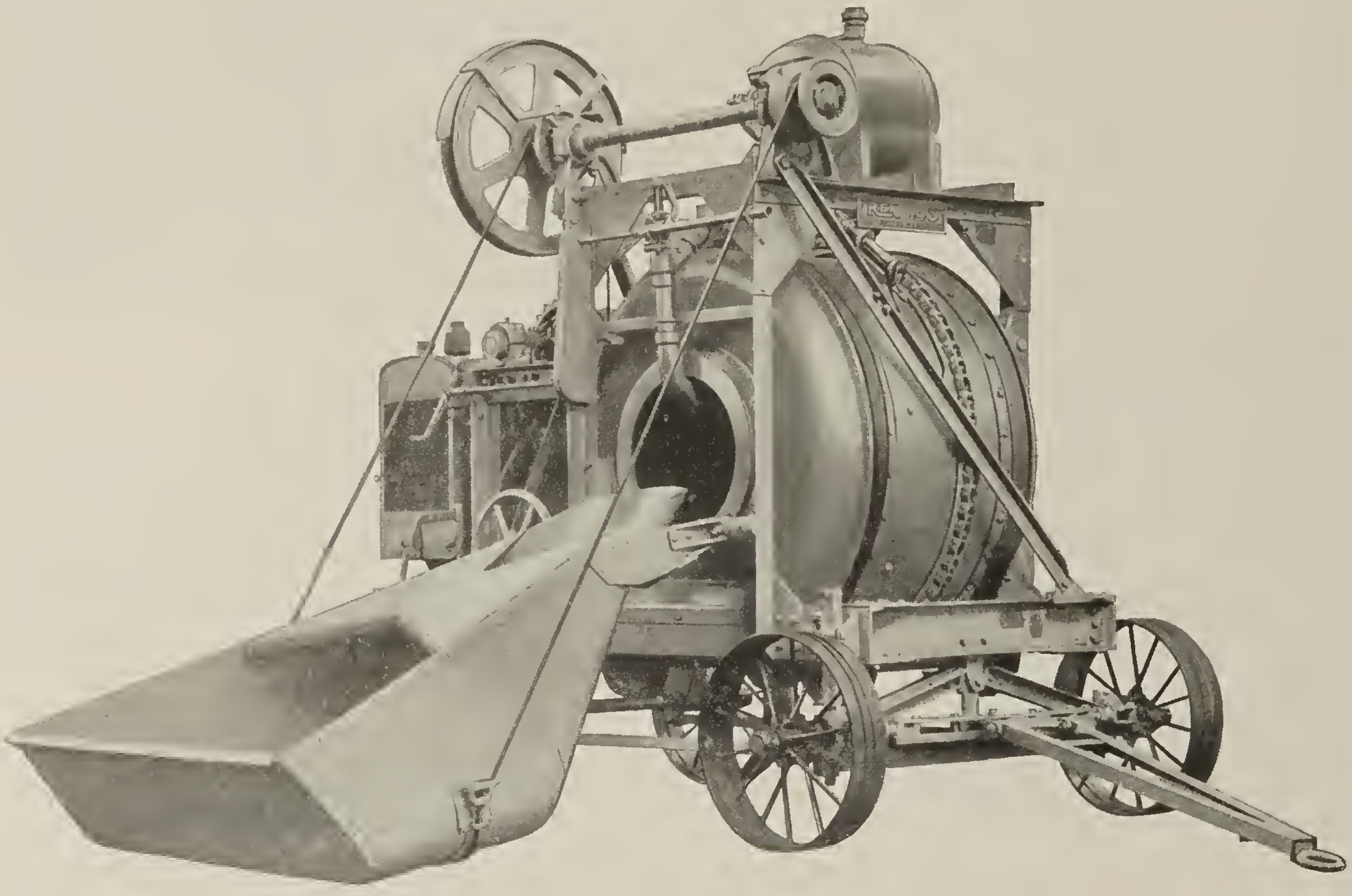
Skip Extensions

For jobs where it is advantages to set the mixer above ground level this Rex Skip Extension is a handy tool. Machines can be equipped with this extension when purchased or can be equipped in the field. The extension is made of heavy steel, well reinforced, and the skip rides on a strong carriage equipped with rollers for smoothness and speed of operation.



REX MIXERS

Made by Chain Belt Company, Milwaukee.



THE REX 14-S IS FAST AND DEPENDABLE

This mixer is built for the contractor who wants fast steady pouring day after day. The Rex 14-S has proven its worth on big jobs under the most punishing operating conditions.

A strong rigid chassis and frame with heavy gussets withstands abuse.

Faster operation — more batches per hour because of streamline skip, big drum openings, wide discharge chute and centralized controls.

An accurate water measuring system insures batches of the same consistency.

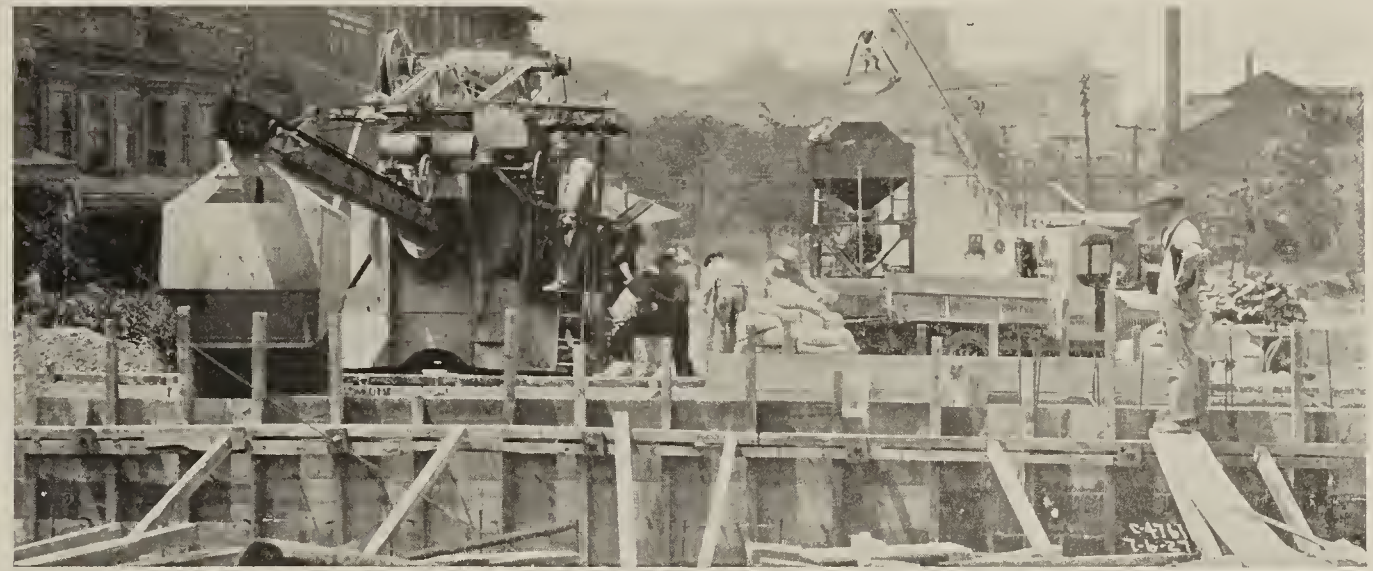
Timken bearings in drum rollers insure smooth action and long life.

Chain driven drum, smooth, quiet and efficient. The most reliable drive.

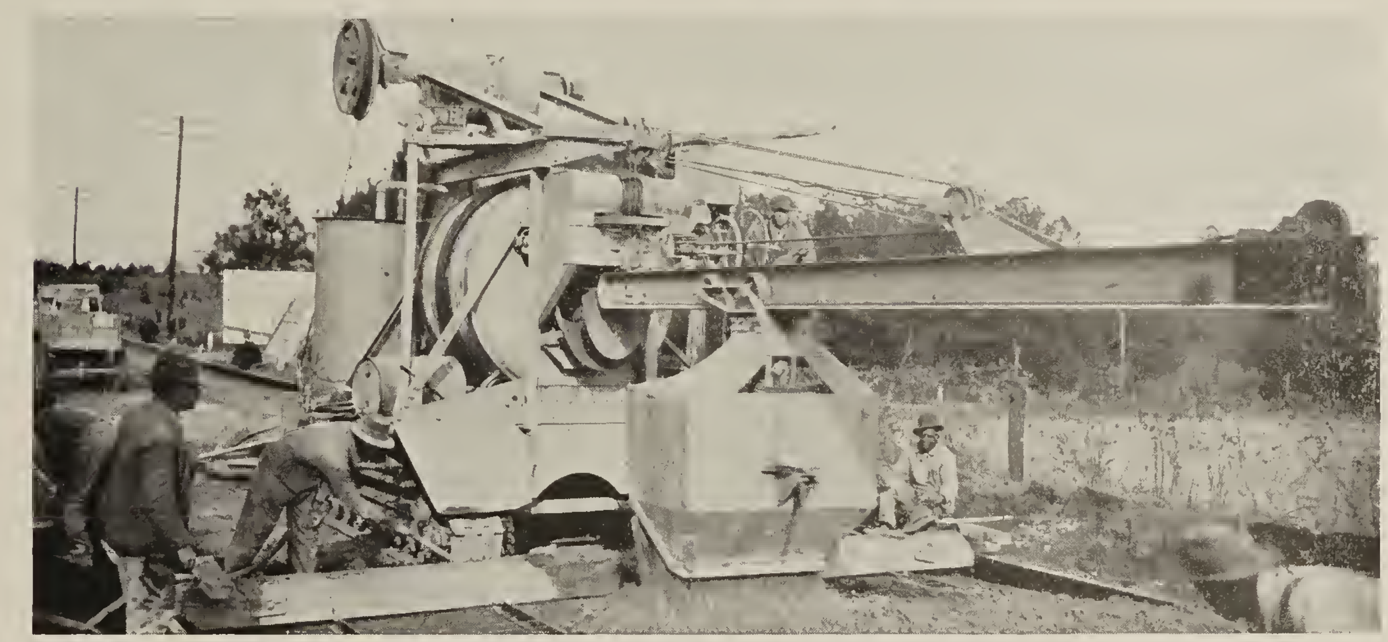
Countershaft with multiple disc clutches mounted on self-aligning bearings.

Standard Equipment: Steel frame on trucks; steel road wheels; 4 cylinder LeRoi gasoline engine.

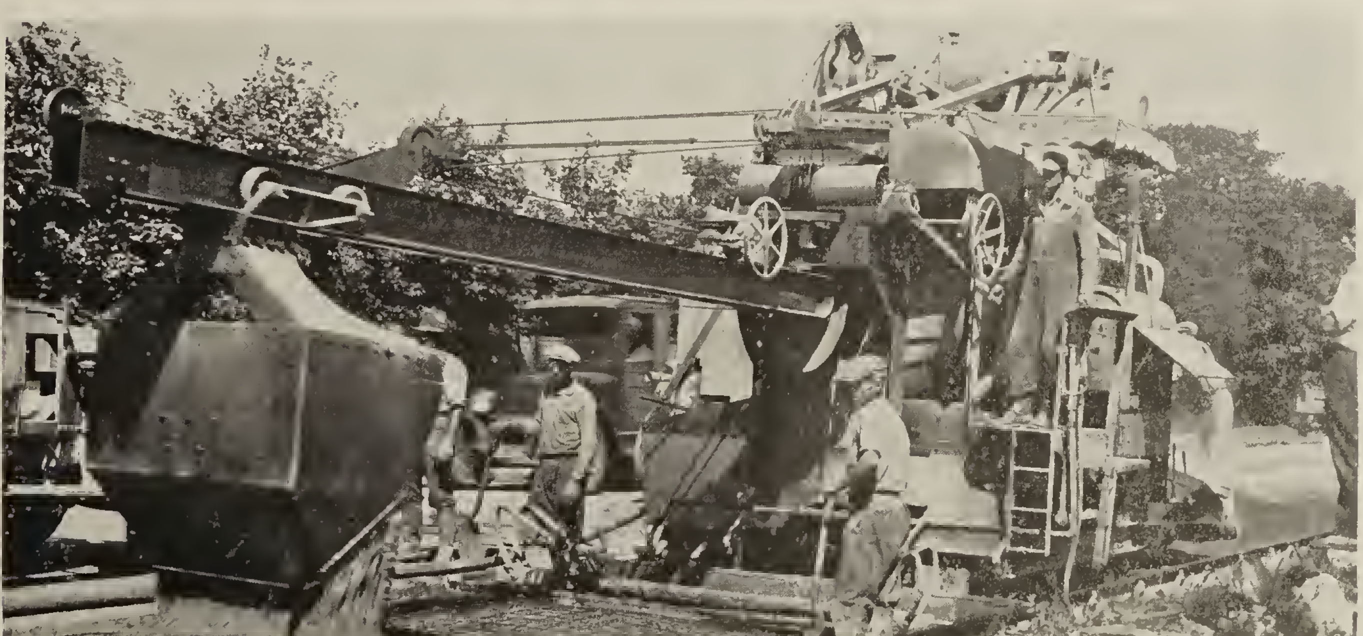
Optional Equipment: Power charging skip with automatic clutch knock-out; automatic water tank; batch hopper; skids instead of road wheels; electric power.



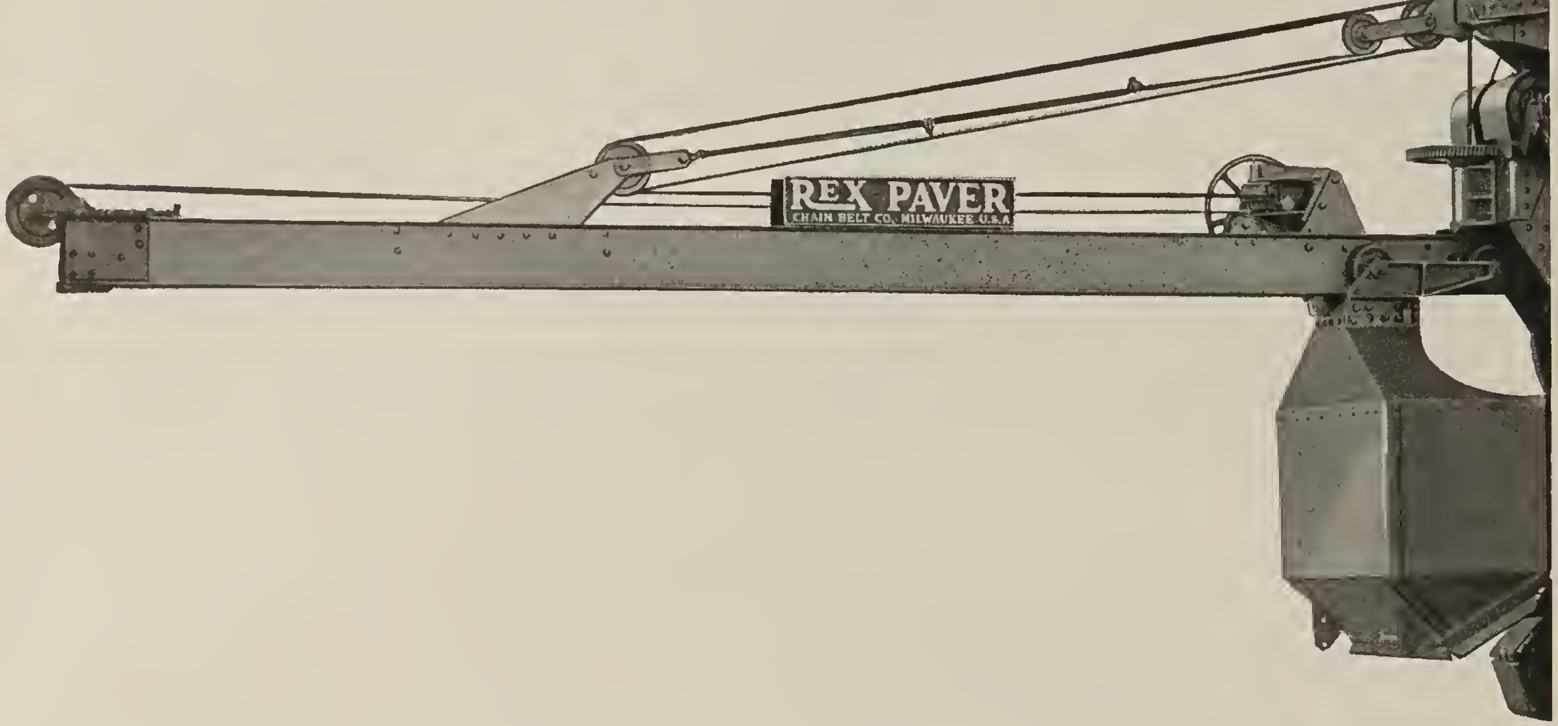
The start of the foundation for the Soldiers' and Sailors' Memorial bridge opposite the State Capitol in Pennsylvania. Note how easily the Rex can be handled to pour directly into the forms.



Rex 27E Paver working on a state road out of Columbus, Georgia.



The above Rex 27E broke the 1927 production record for pouring concrete on State highway work on the Jericho Turnpike, Long Island.



The New Champion for 1930

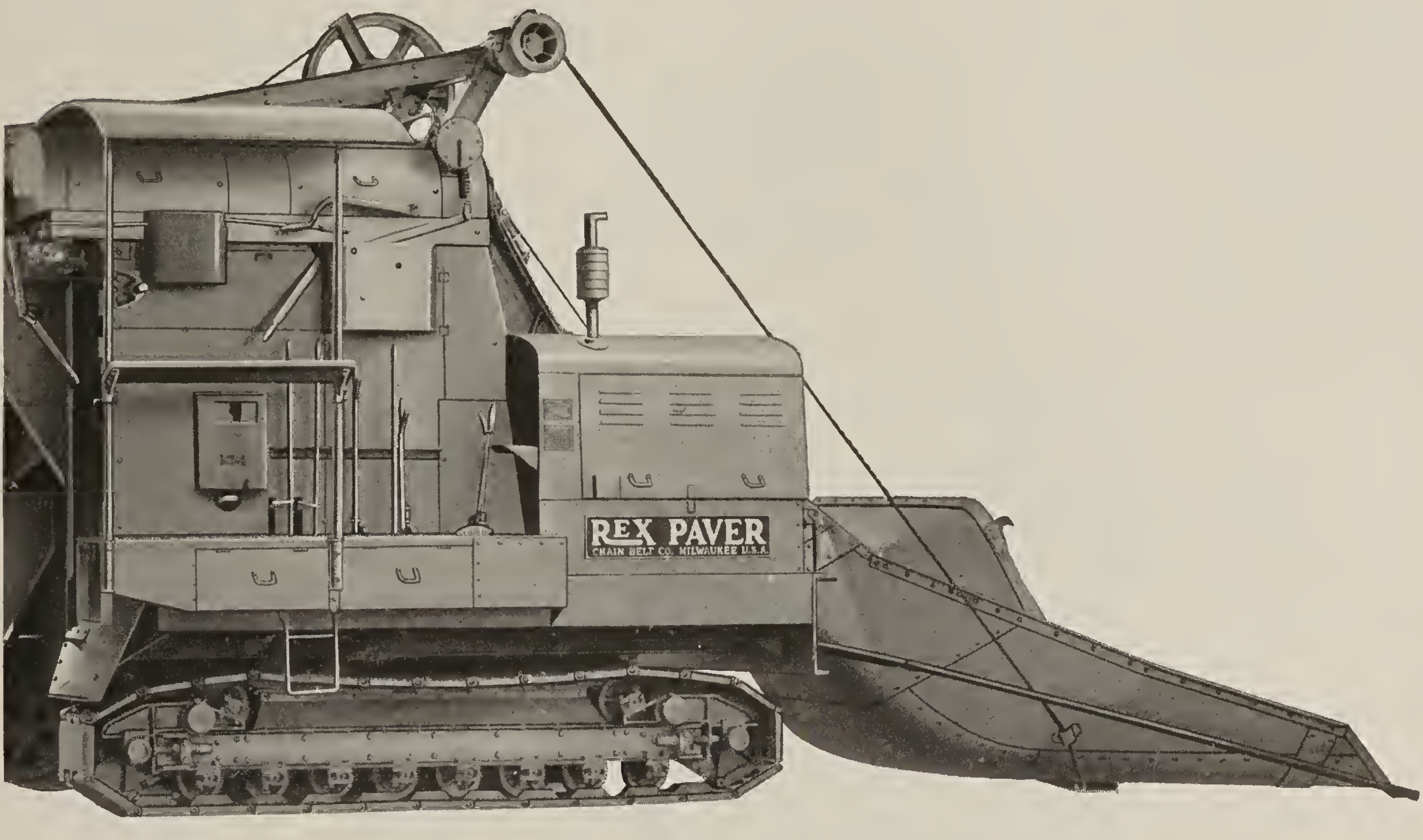
Paving problems have changed tremendously during the past few years. Quick-setting concrete is becoming more common, finer aggregates are being used in many sections, and ultra-dry mixes are standard in many specifications. These changes put new demands on pavers — and to meet these demands Rex has designed the New Champion Paver — a Champion from stem to stern.

The New Champion Drum. Rex set out to build a drum that would be faster and more efficient on the stiffest possible conditions than ordinary drums are under the best conditions. Blading and bucketing has been changed to provide greater leverage for moving dry, heavy, and sticky concrete quickly and easily — and on ordinary aggregates, on wet mixes the New Champion drum is even faster and more efficient. And when the concrete hits the steep discharge chute it's moving fast — and it keeps on moving.

New Champion One-Step Foot Control. The Rex Mechanical Man, the most efficient single operation, automatic control of the mixing cycle — made easy to a degree never before accomplished by means of foot control.
New Champion Skip. A new skip, wide enough for dual pneumatics, not only backing straight in, but on an angle. Streamline — with an extra

New — Big, High Speed Drum
New — Heat Treated Blades and Buckets
New — 26 Inch Drum Openings
New — High Speed Sub-Chute
New — High Speed Discharge Chute
New — Wider, Bigger, Faster Skip
New — Water System
New — Champion Ribbon Bucket
New — Champion One-Step Foot Control

REG. U. S. PAT. OFF. REX



. . . . . The REX 27-E Paver

wide throat and a 26-inch drum opening — no choking or piling. With the new Anticipating Governor that opens the engine wide this extra big skip swings from ground to top in 8 short seconds.

Power Boom Swing. To help the paver operator put every batch on the spot, the heavy 10-inch Rex boom is swung by power.

Bigger Ribbon Bucket. Bigger, steep-sided, and free from obstructions the New Champion Bucket dumps any kind of concrete cleanly, into a broad flat ribbon of concrete.

New Champion Frame — New Champion Chassis. A heavier, stronger, structural steel frame, with an overstrength chassis support the New Champion, and the crawler treads are heavier and wider.

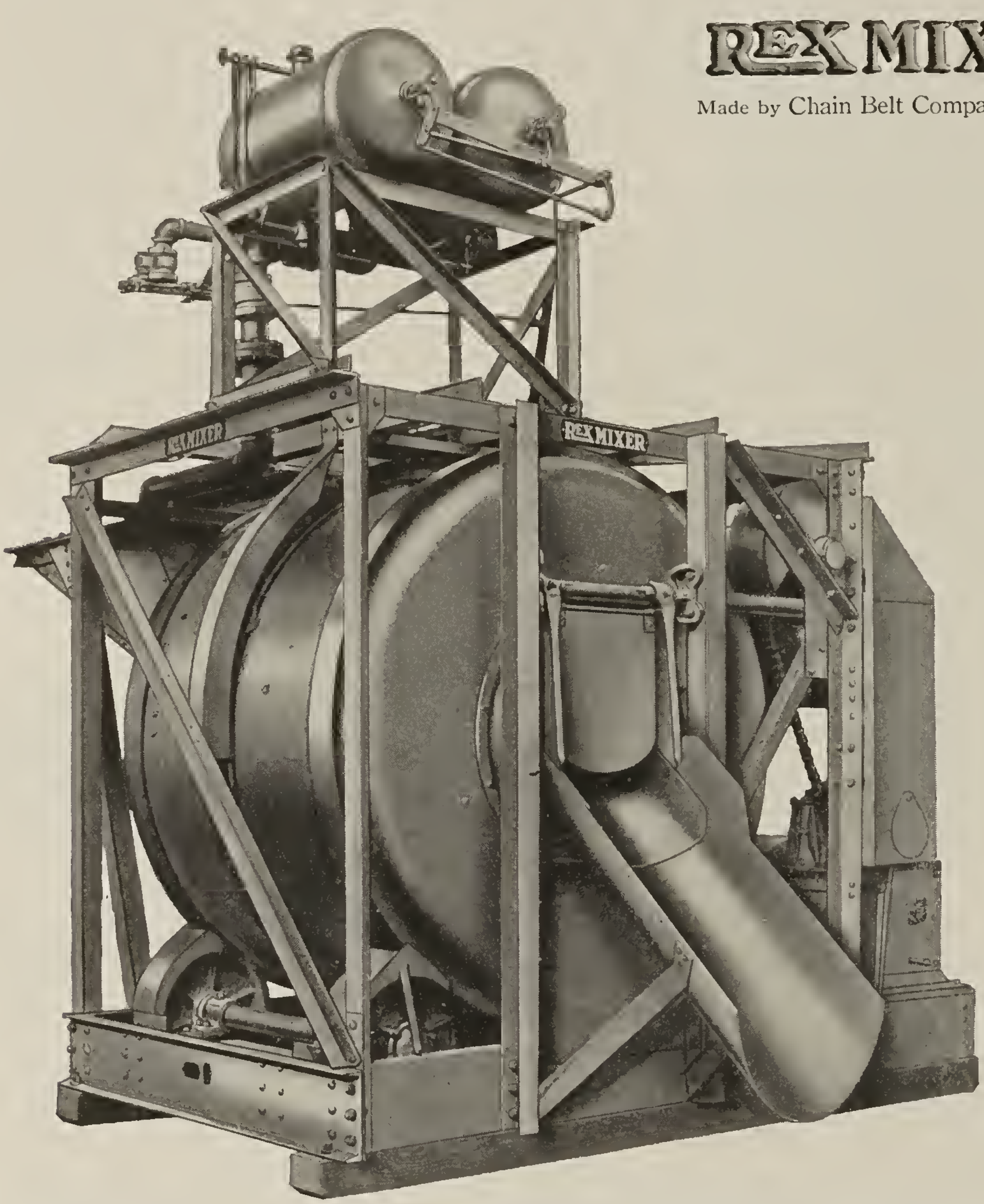
Multiple disc clutches, enclosed transmission running in oil, bigger Rex Chain drives, genuine Timken Roller Bearings, and a new, larger 6 cylinder Waukesha motor are more of the New Champion's features.

Ask for a catalog on The New Champion — it will convince you without a doubt that it is the outstanding paver on the market — The Finest, Fastest Paver Ever Built.

New — Larger Waukesha Motor
New — Anticipating Governor
New — Oversize, all steel Driving Chains
New — Larger, Oversize Cables
New — Platform and Built-in Steel Canopy
New — 68-Second Mixing Cycle
New — Larger Crawler Chain Treads
New — Lower, Stronger Top Frame
New — Oversize Husky Chassis

REX MIXERS

Made by Chain Belt Company, Milwaukee



HIGH SPEED MIXERS FOR THE BIG JOBS

The Rex 28-S, 56-S, and 84-S are ideal mixers for the bigger jobs, central mixing plants, or big building projects. These machines are built for speed, for fast handling of materials. Their capacities are 1, 2, and 3 yards of mixed concrete per batch. Here are some of the features that make these Rex Mixers leaders in the field.

Extra large drum openings, big blades that grab the aggregates as fast as they come, and deep wide buckets which dump heaping loads of well mixed concrete onto a wide discharge chute.

Built with the sturdy strength made possible by tough certified malleable castings, shock-resisting cast steel and a heavy solid structural steel frames.

Accurate water systems — no dribble — assures batches of uniform consistency.

Flexible Chabelco All Steel chain drive absorbs the shocks of heavy loads and sudden jolts.

A power operated discharge mechanism completely enclosed and operating in oil.

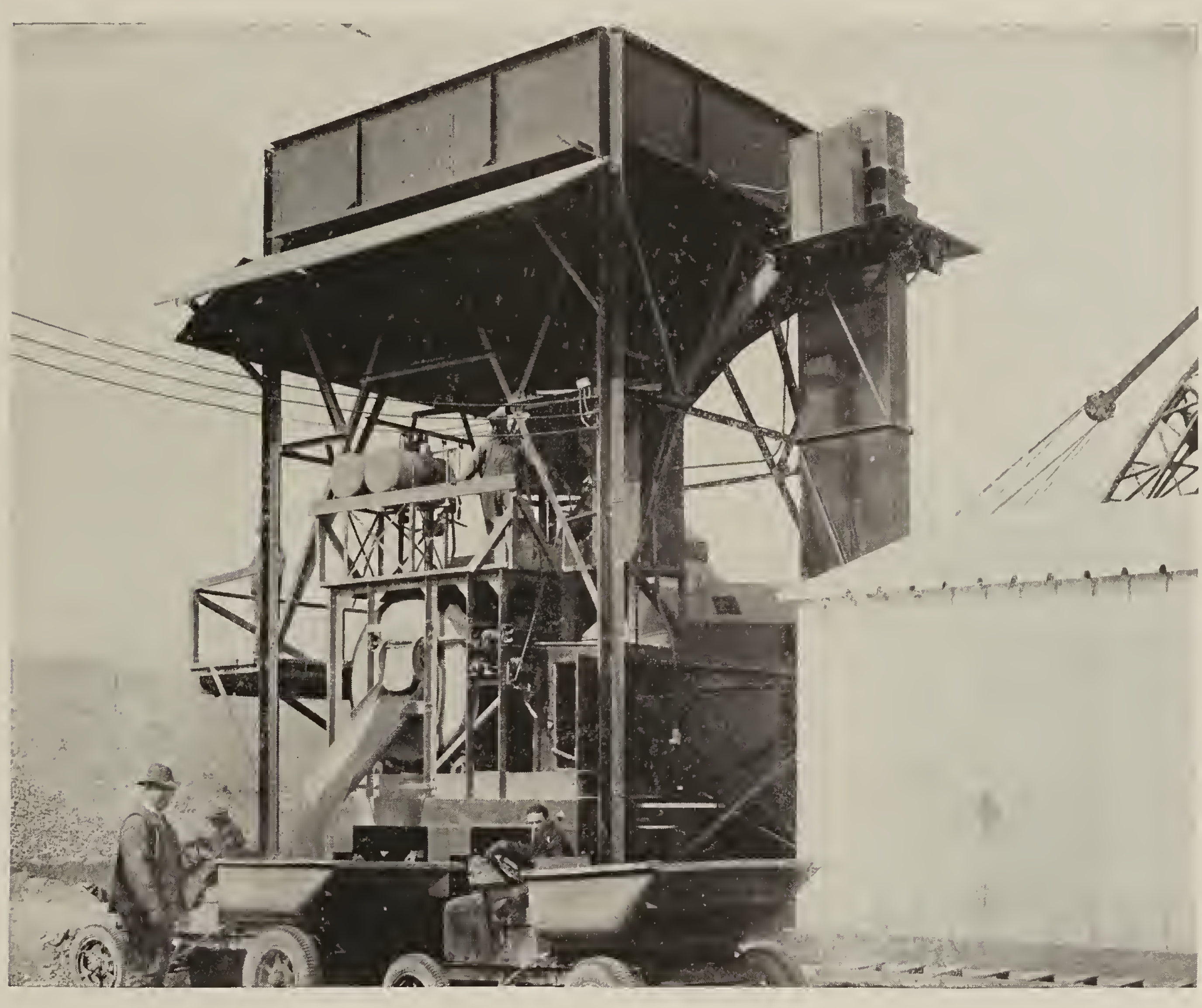
Timken Roller Bearings in chilled drum rollers for operating smoothness and long life.

Standard Equipment: Steel frame on skids; enclosed power operated discharge; standard charging hopper or batch hopper.

Optional Equipment: Automatic water tank; overhead operators' platform; platform railing; batchmeter; steam, gas, or electric power.

REX CENTRAL MIXING PLANT

Made by Chain Belt Company, Milwaukee.



A COMPLETE REX PLANT OR EQUIPMENT FOR THE PLANT YOU NOW OWN

Complete plant designed for lowest cost of operation or new units provided to save money in your present plant.

Plant Lay-outs and Erection

Complete concrete mixing plants for any purpose and any size or capacity.

Rex Concrete Mixers for any size of Plant

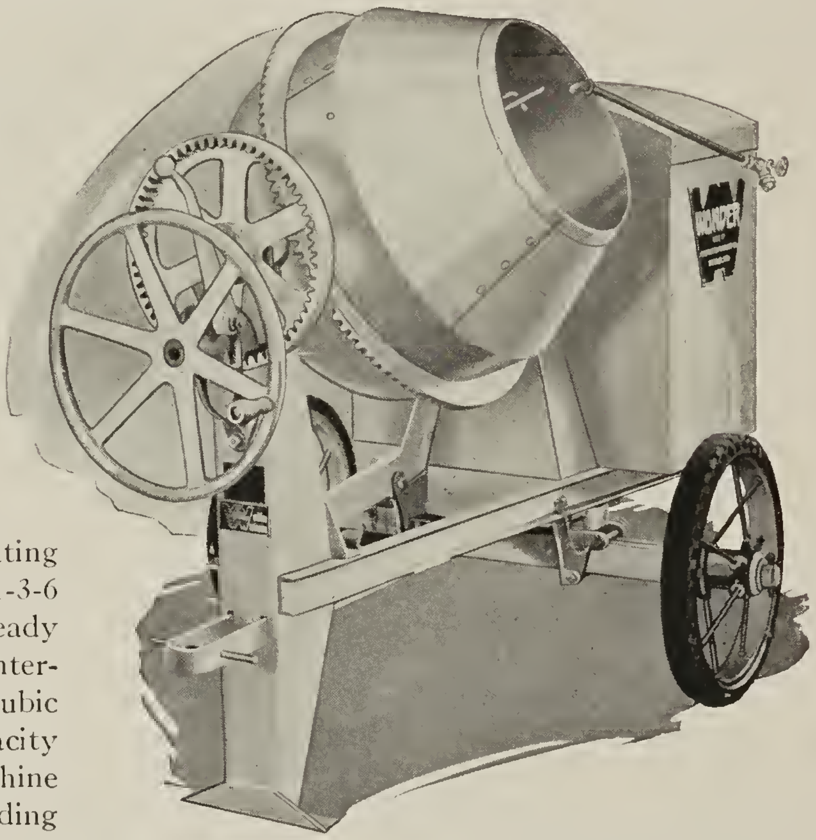
Write us the capacity you need, your material source, ground space available, location of railroad siding, and whether you receive material in trucks, bottom dump, or gondola cars. We will be glad to submit a plan and estimate.

Complete Material Handling Plants

Elevators and Conveyors for:
- Cement handling.
- Sand, Gravel and Stone handling.
- Sand and Gravel Pits.
- Ground Storage in Contractors' plants.
- Material Yards.
- Builders' Supply Yards.

WONDER CONSTRUCTION MACHINERY CO. MIXERS

WONDER HALF-BAGGERS



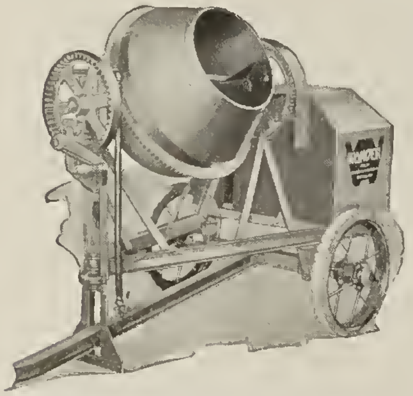
The new Wonder 3½-S trailer. Furnished also on two steel tired wheels at lower cost, or on four steel wheels if preferred

Hi-Speed Wonder Trailers

Your choice of two high speed one-half bag trailer models—either the new, Timken equipped Wonder 3½-S or the slightly smaller, lower priced Wonder 3-S. The new Wonder 3½-S is the ultra-modern trailer mixer—built for speed from job to job and for speed on the job.

Output Per 8-Hour Day

The Wonder 3½ has a full one-half bag rating (A.G.C. standard) up to and including a 1-3-6 mix. It will pour up to 55 cubic yards on steady runs; 20 to 35 cubic yards where work is interrupted; with a good daily average of 40 cubic yards of better mixed concrete. The capacity of the Wonder 3 is slightly less, this machine handling a one-half bag mix up to and including 1-2½-4.

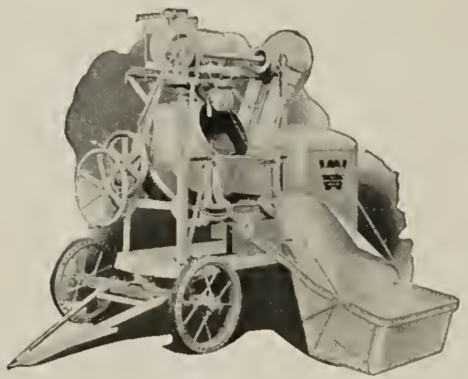


Wonder 3-S trailer model. Also furnished on two steel tired wheels, or four steel wheels if desired

Exclusive New Wonder 3½-S Features

1. Distinctive mixing drum and blades insure fast, thorough mixing.
2. Guaranteed for the life of the mixer drum ball bearing.
3. An internal gear tilt with which, with one finger, you can stop the bowl instantly and hold it.
4. Cushion tired steel roller bearing wheels and spring mounted axle.
5. Telescoping tongue that hooks right on—no bolts to bother with.
6. Alemite-Zerk lubrication.
7. All-steel construction throughout. Pressed or structural steel have replaced castings wherever practical.
8. Highest grade 2 H.P. industrial engine that money can buy—Wico ignition. Power plant, engine pinion, chain and mixer drive sprocket all enclosed in substantial steel house.

—And many more.

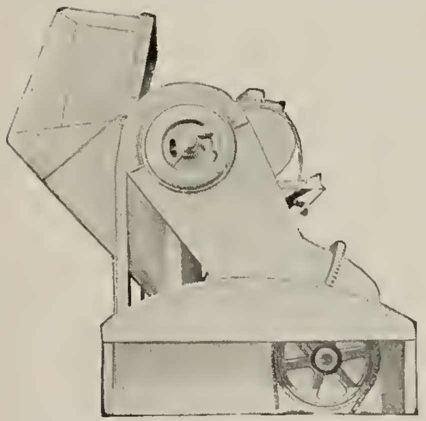


New Wonder 3½-S with pivoted power loader and WONDERQUICK water tank

30% Faster

WONDER CONSTRUCTION MACHINERY CO. MIXERS

A FEW OUTSTANDING WONDER FEATURES



Diamond type high speed roller chain throughout, running over cut sprockets and completely enclosed

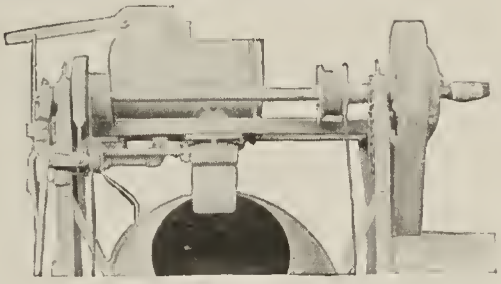
TIMKEN
Tapered
ROLLER BEARINGS

Timken tapered roller bearings are used, with few exceptions, on the main drive shaft of Wonder mixers, thus eliminating friction almost entirely.

Although the track loader is still available on all Wonder one-baggers, it is also now possible to obtain these mixers with pivoted power loader of unique, improved design.

A radically improved tilting device is a new feature. The bowl can be stopped instantly with the pressure of one finger—and held there.

These, and other Wonder improvements, are fully discussed in bulletins free to you for the asking.



Wonderquick water measuring tank, accurate, reliable, fast. Free from troublesome three-way valves and other complicated mechanism

Special Equipment

In addition to the special equipment illustrated on this page, the following equipment is also available if wanted.

Batchmeter, with or without counter.

Rotary feed water pump.

Light auxiliary hoist.

Extended track when it is desired to elevate your mixer.

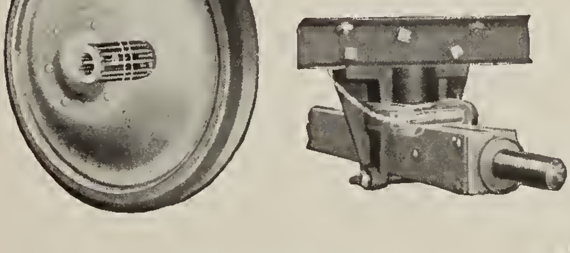
Standard electric motors in place of gasoline engines on all models.

Wonder Handy Force Pumps for furnishing water.

Illustrated particulars gladly on request.

The guaranteed for life single drum bearing. Note the simple sturdy construction of the entire Wonder drum and ball bearing on which it rotates

Roller bearing steel or rubber tired wheels interchangeable. Springs absorb the road shocks

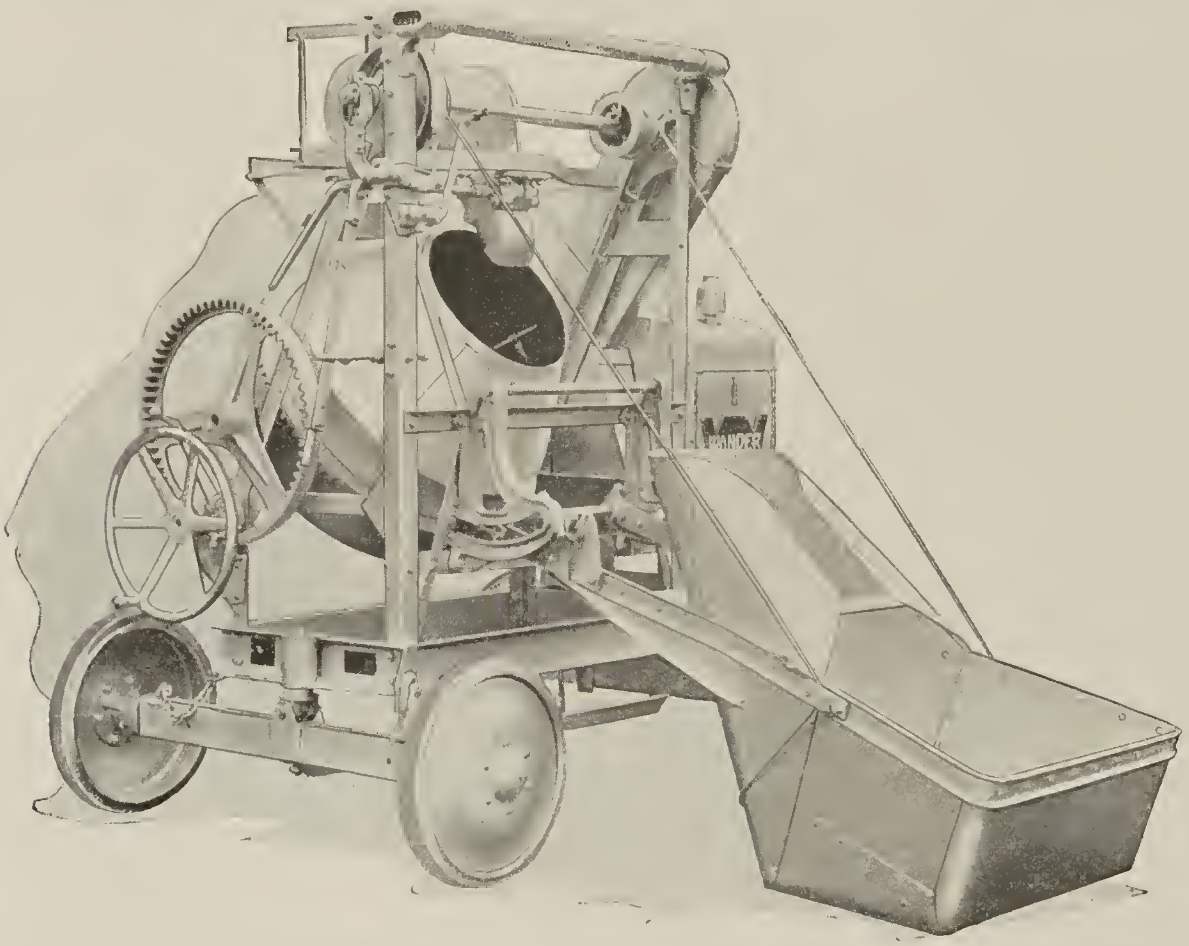


Crosswise trucks for end discharge enabling you to specialize your mixer for small street paving jobs, alley paving and side-walk work

30% Faster

WONDER CONSTRUCTION MACHINERY CO. MIXERS

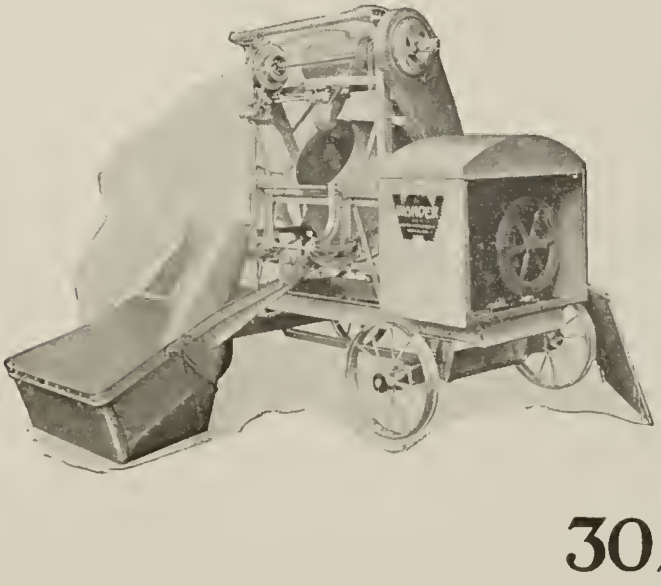
WONDER ONE-BAGGERS



Wonder 5-S and 7-S with Pivoted Loader

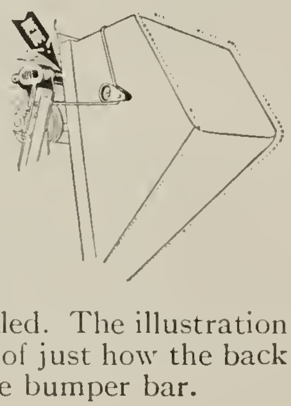
Output Per 8-Hour Day

Both the Wonder 5-S and Wonder 7-S are one-bag mixers, the former having a standard A.G.C. one-bag rating on any mix up to and including 1-2½-4, while the Wonder 7-S has a one-bag rating on all mixes up to and including 1-3-6. With the Wonder 5-S on steady runs it is possible to pour 75 cubic yards. A good working average is 50 cubic yards. With the 7-S this output is stepped up to 125 cubic yards where the mixer is in steady operation, and day in and day out can be banked on for from 80 to 90 cubic yards.



Bump! Bump! Bump!

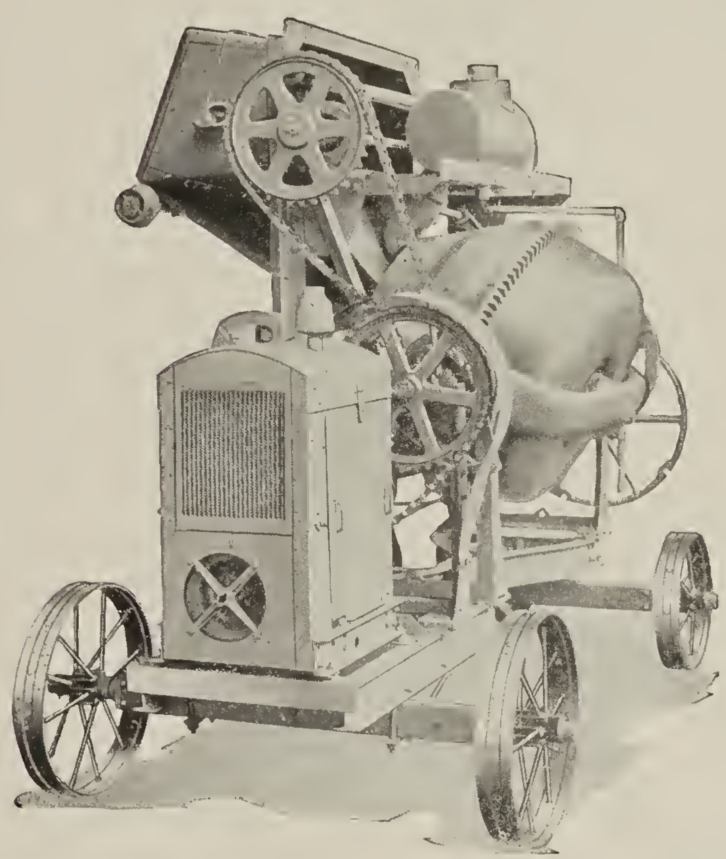
The Wonder charging skip discharges cleanly and rapidly even when sticky materials are used. There are no sharp corners in this skip in which materials can collect. And then, all Wonder one-bag loader machines are equipped with the new, simple, effective WONDER SKIPBUMPER that bumps where a bump is needed. The illustration at the right will give you an idea of just how the back of the skip is bumped against the bumper bar.



30% Faster

WONDER CONSTRUCTION MACHINERY CO. MIXERS

WONDER TWO AND THREE-BAGGERS



Output Per 8-Hour Day

In the Wonder 10-S with folding track loader, we find a modern two-bag mixer. Full A.G.C. rating of two bags of any mix up to and including 1-2-5. On steady pours 160 cubic yards per eight hour day is not unusual, although a safe working average is 120 to 130 cubic yards.

The Wonder 14-S has a standard A.G.C. three-bag rating on any mix up to and including 1-2½-4. 250 cubic yards is an easy day's work when the mixer can pour steadily and it is safe to bank on an average of 175 to 200 cubic yards.

For the Larger Jobs

Big jobs require big mixers and for these jobs the Wonder 10-S and 14-S were designed. The Wonder 10-S is lighter in weight yet stronger than most two-baggers, combining large capacity with easy portability. As standard equipment it has folding track loader, Wonder-quick water tank, and the Wonder skipbumper.

The Wonder 14-S is generally used where the mixer does not have to be moved a great deal. It can be furnished with track loader and water tank or with batch hopper. A power tilting device speeds up its operation.

A.G.C. Ratings

All Wonder mixers from 3½-S to 14-S comply with standard A.G.C. ratings, and each bears the Association name plate accordingly. This name plate is your insurance of a standard product.

General Specifications Wonder Loader Mixers

		W. 5-S	W. 7-S	W. 10-S	W. 14-S
Mixing Drum	Diameter	36″	40″	42″	54″
	Depth	32¾″	33½″	38½″	38″
	Size Opening	20″	21″	21″	25″
	Mixing Blades	4	4	4	4
Engine—Horse Power		3½, 5, 6 or 5-8	5, 6 or 5-8	5-8, 6 or 10-12	12-15
Trucks	Front	22″	22″	26″	24″
	Rear	26″	26″	30″	30″
Transmission		Chain	Chain	Chain	Chain
Trunnion		Semi-Steel	Semi-Steel	Semi-Steel	Steel
Lubrication		Alemite-Zerk	Alemite-Zerk	Alemite-Zerk	Alemite-Zerk
Method Discharge—Internal Gear with		Handwheel	Handwheel	Handwheel	Power Discharge
Weights	On 4 steel wheels 3½ H. P. engine and house	3115	——	——	——
	On 4 steel wheels 5 H. P. engine and house	3028	3503	——	——
	On 4 steel wheels 6 H. P. 2 cyl. LeRoi and house	3043	3518	4000	——
	On 4 steel wheels 5-8 H. P. 2 cyl. LeRoi and house	3093	3568	4050	——
	On 4 steel wheels 10-12 H. P. 4 cyl. LeRoi and house	——	——	4145	——
	On 4 steel wheels 12-15 H. P. 4 cyl. LeRoi and house	——	——	——	6849
	If water tank not desired, deduct	150	150	160	175

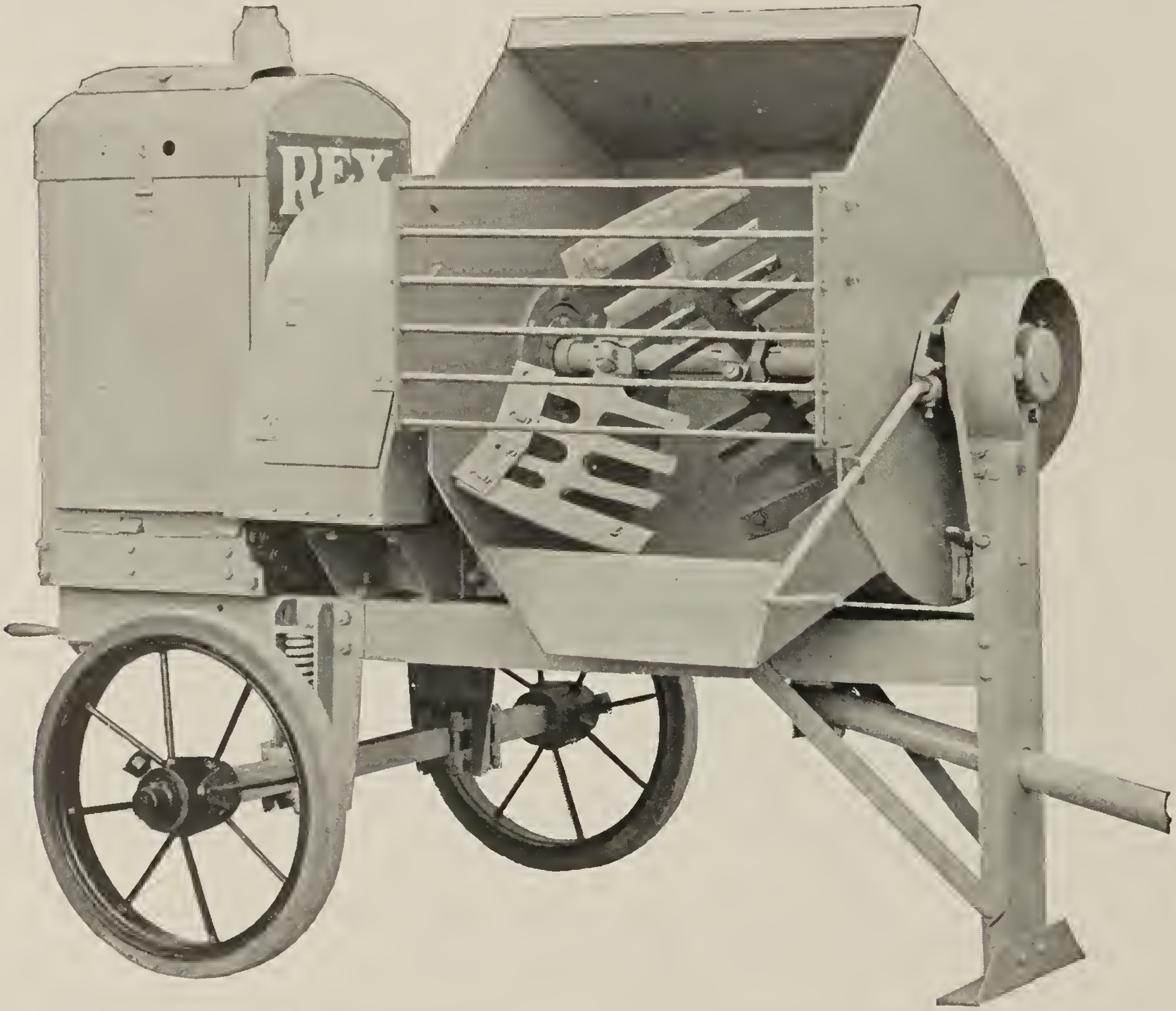
Wonder Mixer Capacities (Bags Cement)

Proportions—	1-1½-3	1-1½-3½	1-2-3	1-2-3½	1-2-4	1-2½-4	1-2-5	1-2½-5	1-3-5	1-3-6
W. 3½-S	1	½	½	½	½	½	½	½	½	½
W. 5-S	1	1	1	1	1	1	½	½	½	½
W. 7-S	2	1	1	1	1	1	1	1	1	1
W. 10-S	3	2	2	2	2	2	2	1	1	1
W. 14-S	4	3	3	3	3	3	2	2	2	2

30% Faster

REX PLASTER--MORTAR MIXERS

Made by Chain Belt Company, Milwaukee.



Rex No. 6 Plaster and Mortar Mixer

WIDE DISCHARGE TYPE

A Rex Plaster Mixer cuts mixing costs in half, saves from 10% to 20% of lime used, and gives a better mix with no lumps or white spots. Machine mixed plaster spreads farther and is easier to apply.

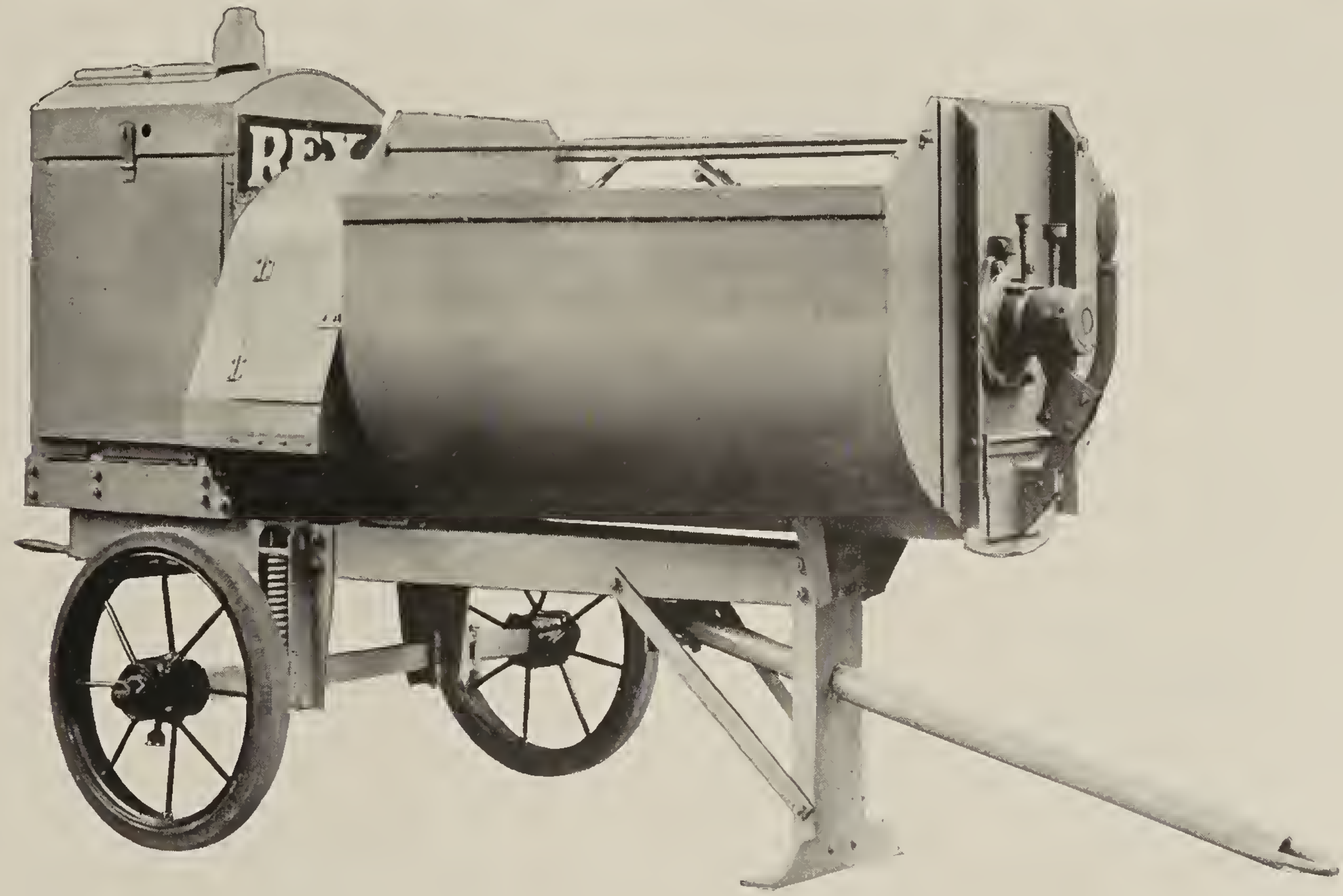
Paddles are designed to mix hard wall plaster, lime plaster, (including any amount of fibre) sand finish, cement finish, magnicite, stucco, mortar, etc. An adjustable strip of hardened steel is attached to the end of each paddle and to the side paddles assuring a clean discharge. The Rex seal ring eliminates the use of packing, hardened steel parts keeping the sand, water and plaster from seeping into the bearings.

A 5 h.p. LeRoi engine is standard equipment with a 3 h.p. Stover engine optional, both totally enclosed and automatically lubricated. A narrow axle with an overall width of 32″ can be supplied with the LeRoi engine and permits moving from room to room.

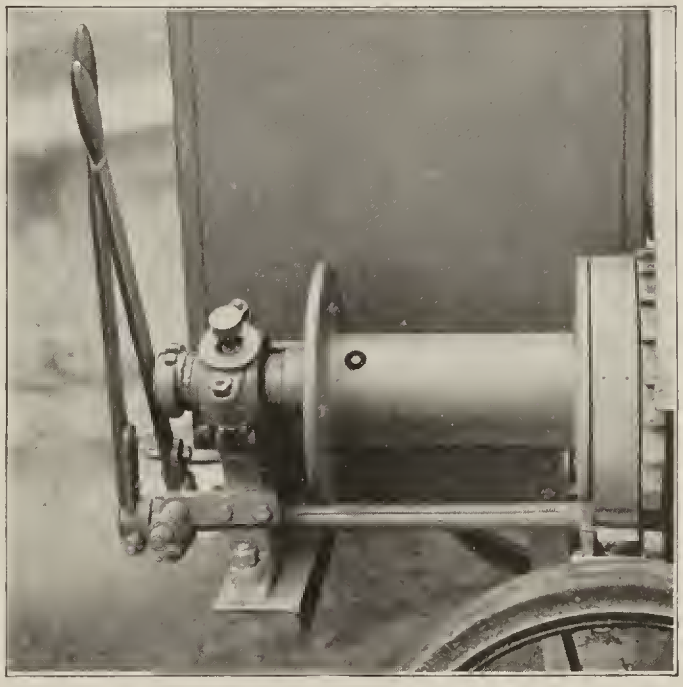
The capacity is 6 cubic feet of mixed material per batch and the machine is driven with cut gears and Rex Chabelco steel roller chain. The double disc clutch is mounted on the paddle shaft with bearings equipped with phosphor bronze bushings.

REX PLASTER--MORTAR MIXERS

Made by Chain Belt Company, Milwaukee.



No. 11 End Discharge Mortar Mixer



This machine with a capacity of 15 cubic feet of mortar per batch is built for the larger machine contractors primarily for mixing mortar. The large 30″ diameter gives a quick, thorough mixing action, the cast steel paddles with adjustable hardened steel wearing bars extend and plow through the material giving a criss-cross action with a discharge time of about 15 seconds.

HOISTS

The Rex Plaster Mixer with a hoist is built to mix and handle plaster at the lowest possible cost. Its capacity is 500 lbs. at a speed of 170 ft. per minute. Standard cone type hoist clutch with clutch lever and brake lever and a ratchet and pawl are included. The machine is equipped with 2 cylinder 8 h.p. LeRoi engine.

ARCHER Tower Equipment includes two sizes of tubular or pipe towers, two sizes of mast towers, and buckets and hoppers for wooden towers which the contractor builds himself; also a full line of spouting equipment.

Archer Tubular Steel Towers

Archer Tubular Steel Towers are built in two sizes. The Heavy Duty type furnished with two or three wheel barrow capacity cages in one or more wells and for towers of any height. Platforms for two wheelbarrows are 6′ 3″ x 6′ 6″ and for three wheelbarrows are 6′ 6″ x 7′ 10″. Heavy duty towers are always used for over two hundred feet in height and when ¾ or 1 yard buckets are desired, also whenever spouting is to be hung off from the tower. Light Duty towers are furnished for two or three wheelbarrow cages in one or more wells and for towers up to 200 feet in height. Light Duty towers are equipped with ½ yard buckets and platforms for two wheelbarrows are 5′ 9″ x 6′ 6″ and for three wheelbarrows are 7′ 3″ x 6′ 6″.

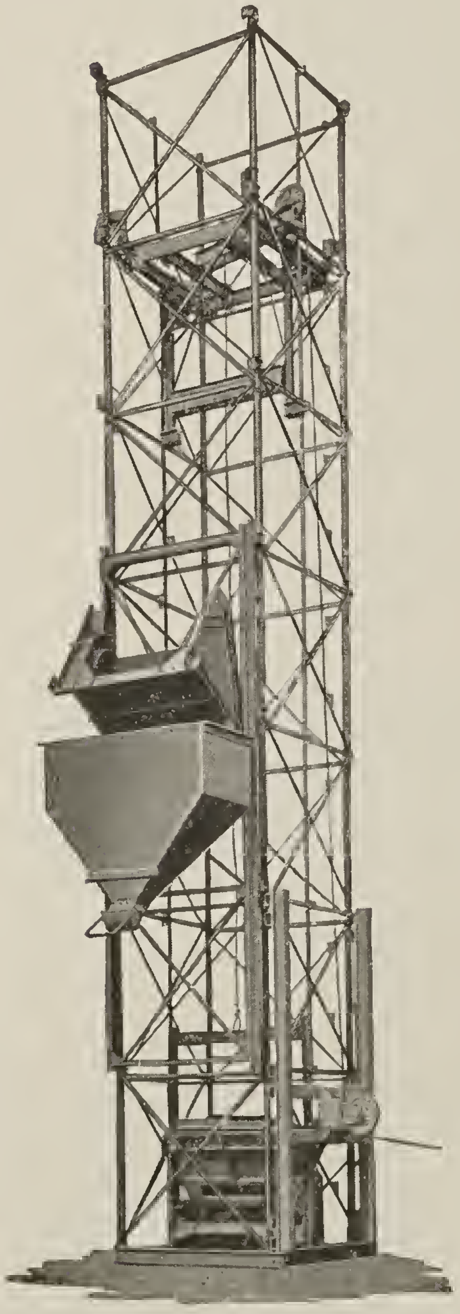


Illustration Showing Single Well Tower equipped with concrete apparatus.

THE ARCHER IRON WORKS

All Archer Tubular Towers can be equipped with outboard or outside elevator. This is accomplished by attaching tracks to the outside face of the tower opposite to the side the bottom sheave set is fastened to. The advantage of this arrangement is to make a two well tower out of a single well or three well out of a two well at only a small additional expense.

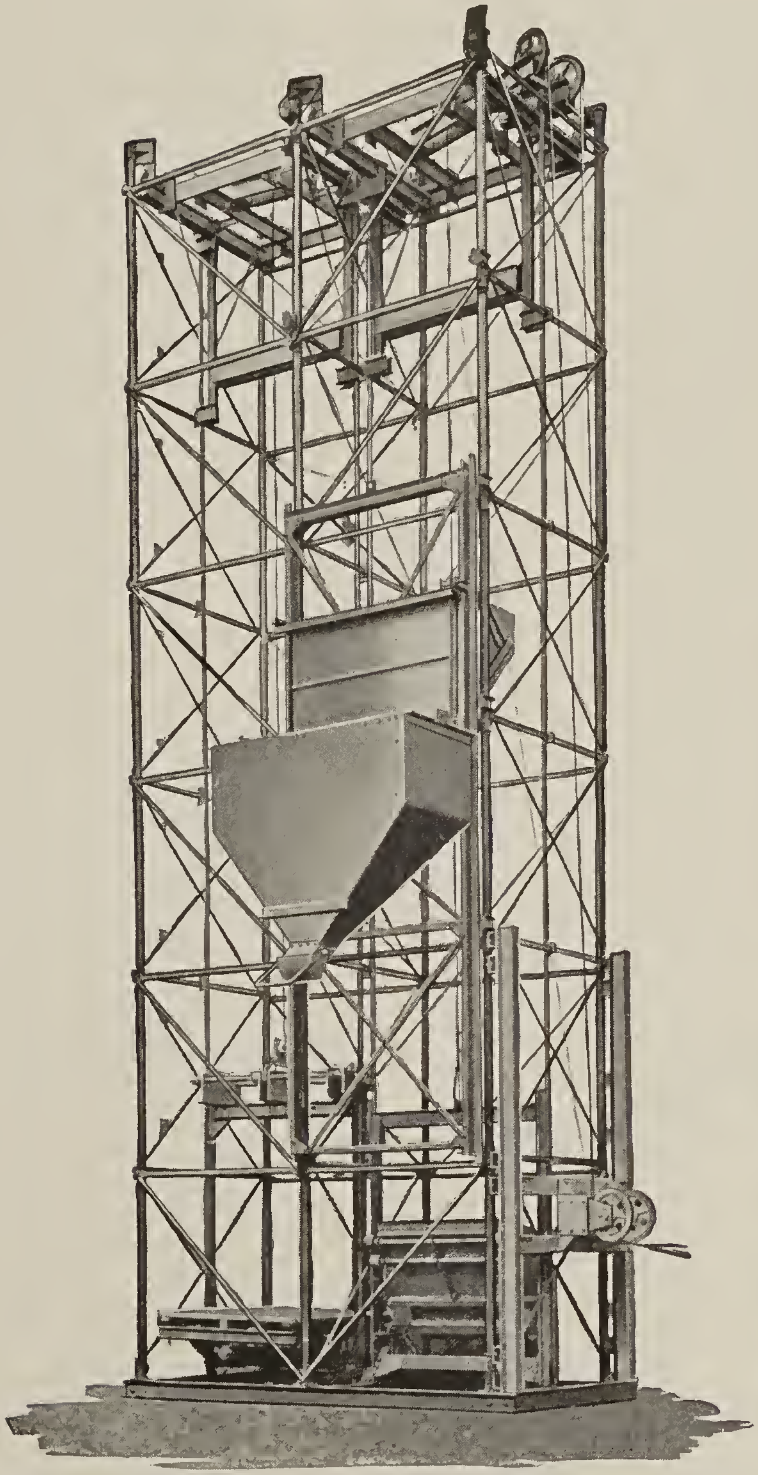
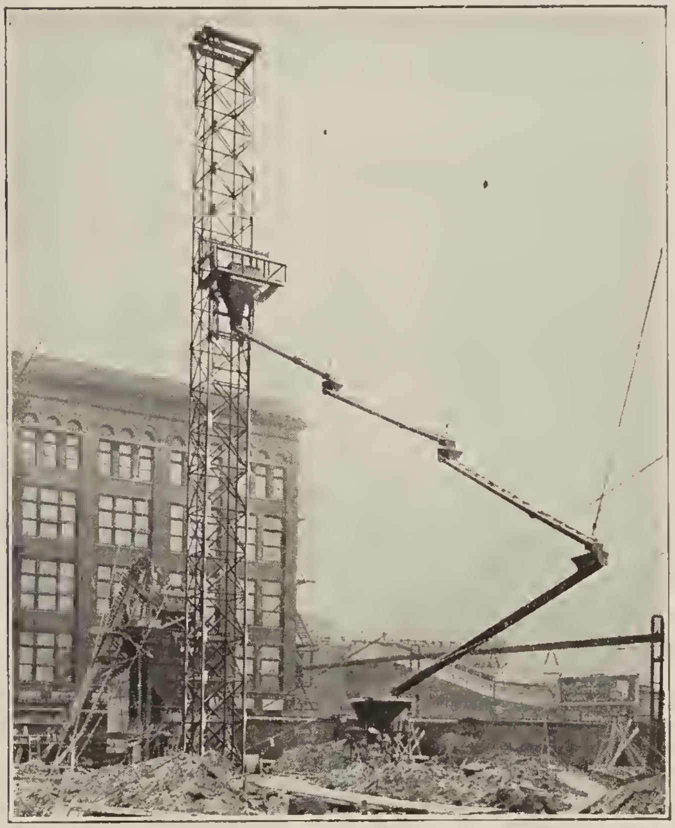


Illustration Showing Double Well Tower with one well equipped for concrete and the other well equipped with material platform.



Cut Showing Single Well Tower with high line from which swivel head spouting is supported. Most any combination of spouting can be hung from Archer Tubular Towers.

Complete Catalog Descriptive of Archer Tubular Towers Can Be Had on Request.

THE ARCHER IRON WORKS

Archer Steel Mast Outfits

Archer Steel Mast Outfits are built in two sizes: Light Duty for use with 7 and 14 cu. ft. buckets and towers of 160 ft. in height guy supported; and Heavy Duty used with 14, 21, and 28 cu. ft. buckets is recommended for towers 220 ft. high guy supported and are strong enough to hang off a boom counterweight plant.

Mast sections are made in 20 ft. lengths and are interchangeable. Cross arm brackets of heavy I-beam construction are furnished for bolting to the mast at 40 ft. intervals.

Buckets are heavily constructed and so arranged that they can overrun the hopper and automatically right themselves when lowered.

Hoppers are provided with dumping guides to tip bucket wherever hopper is placed on mast. All hoppers have gates at bottom to regulate flow of concrete into chutes. All hoppers are mounted on sliding frames.

Sheaves in cat head are furnished with Hyatt bearings requiring oiling only once a week.

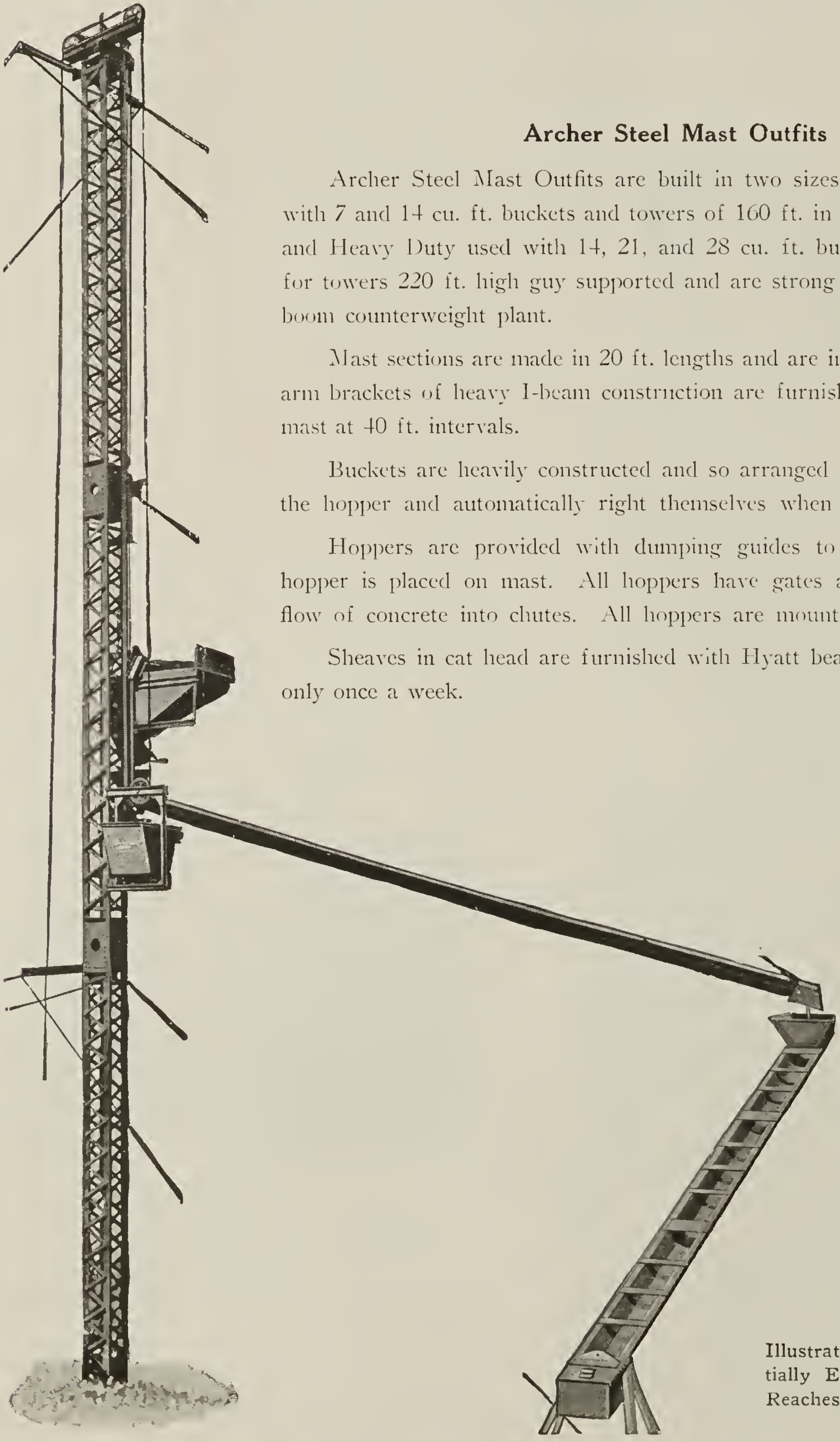


Illustration Shows Bucket Partially Elevated Just Before It Reaches the Receiving Hopper

THE ARCHER IRON WORKS

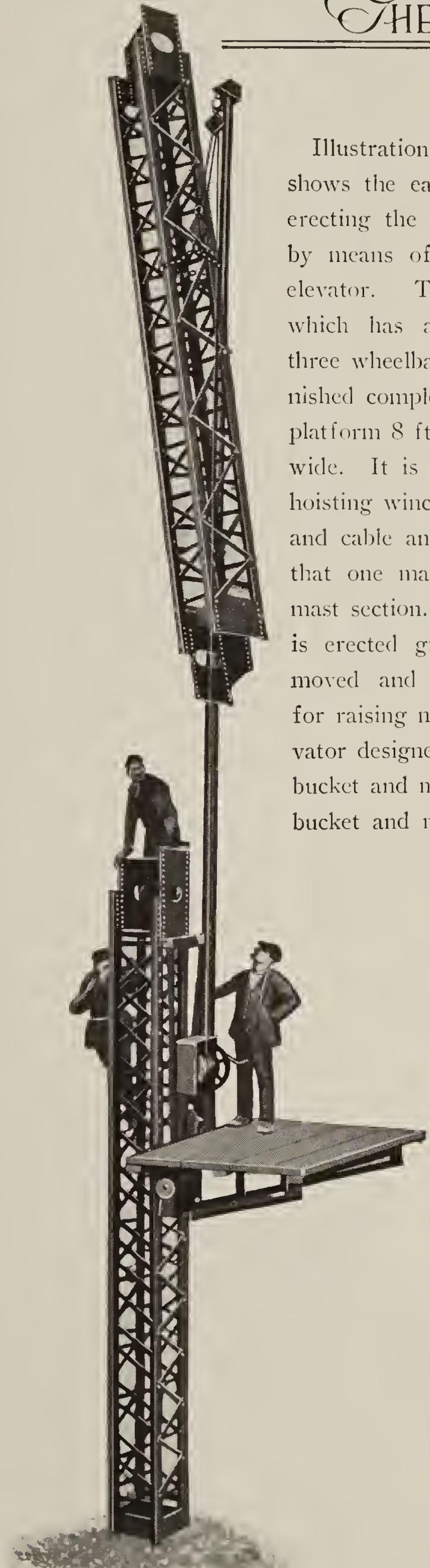
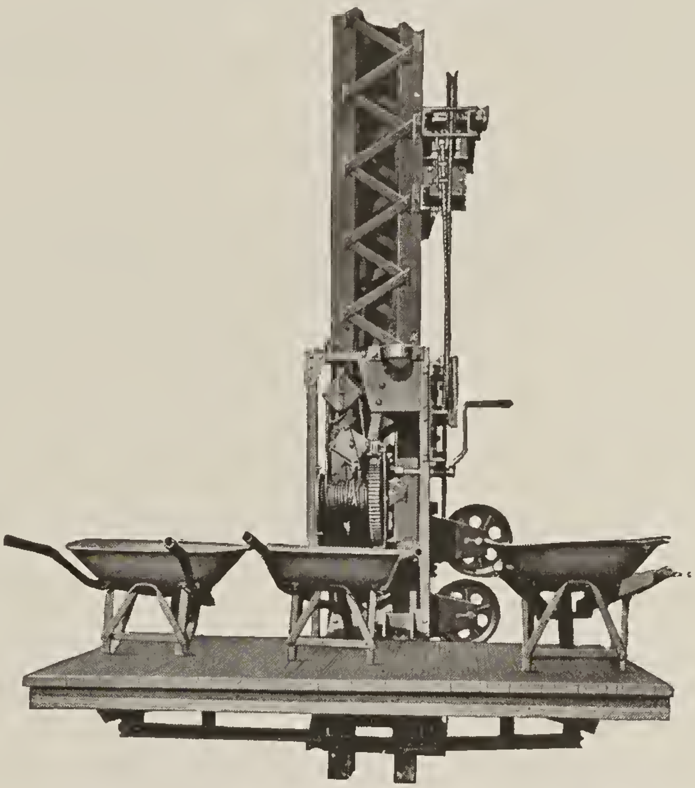


Illustration on the left shows the easy method of erecting the Archer Masts by means of the material elevator. The elevator, which has a capacity of three wheelbarrows, is furnished complete with wood platform 8 ft. long by 6 ft. wide. It is equipped with hoisting winch, steel blocks and cable and arranged so that one man can raise a mast section. When tower is erected gin pole is removed and elevator used for raising materials. Elevator designed for a capacity of 2000 pounds. With double drum hoist concrete bucket and material elevator can be handled by one engineer. Both the concrete bucket and material elevator work entirely independently of one another.



Elevator with 3 Wheelbarrows; Gin Pole Removed

Boom Chute Plants

These plants are furnished in 30 ft. lengths for the light duty mast and 40 ft. lengths for the heavy duty mast. The first section of chute is held to the mast by cable to small slide up frame and is raised with the hopper as one unit. The hopper end of second section of chute is hung off from discharge end of boom chute.

Boom Counterweight Plants

Archer Heavy Duty Masts can be furnished with a 40 ft. boom, 40 ft. boom chute, and 40 ft. counterweight giving a radius of 80 ft. from the mast. Such a plant is very desirable for foundations and building work and appeals to a great many contractors who desire easy handling of concrete chutes over a small area.

Write for Complete Catalog Covering Mast Equipment

THE ARCHER IRON WORKS

Hoist Tower Equipment for Wood Towers

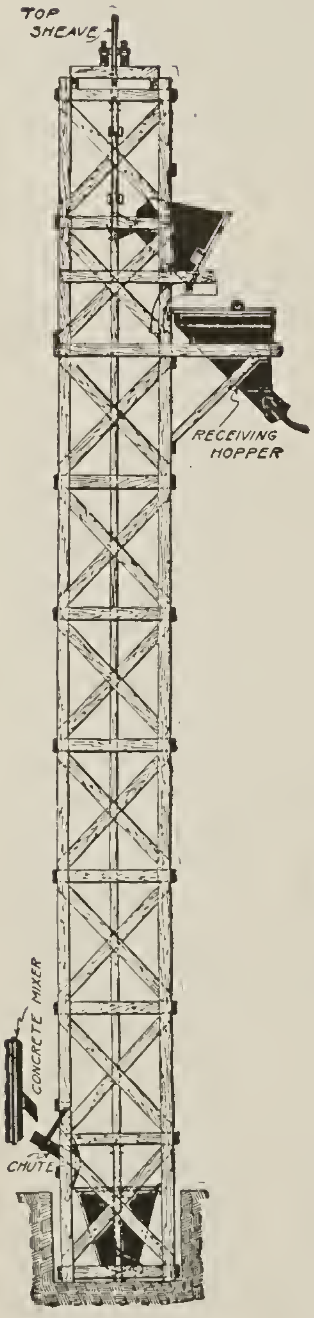
These pages contain illustrations and information about Archer Hoist Tower Equipment and include only the most essential accessories. All are of rugged and simple construction, which make certain utmost efficiency and long life. The accessories are built in sizes to conform with standard hoist tower construction. Complete information as to specifications and construction are contained in our catalog, in which all Archer equipment is included. A copy will gladly be sent upon request.

Built in Five Standard Sizes

No. 107. ¼ yard capacity.
No. 114. ½ yard capacity.
No. 121. ¾ yard capacity.
No. 128. 1 yard capacity.
No. 135. 1¼ yard capacity.

Each Tower Outfit Includes

Two Top Sheave Wheels and Boxes.
One Bucket and Bail Complete.
One Receiving Hopper fitted with Bucket dumping guides.
One Balanced Swing Chute and boxes for fastening.
One Bottom Swivel Sheave Wheel.

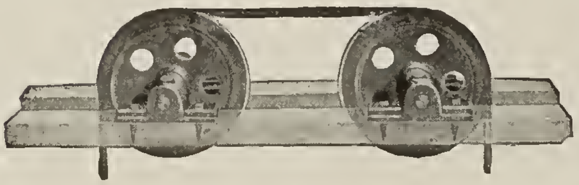


General Information

No.	BUCKET			H. P. at 100 Ft. per Min.	Cable	Sheaves	Use with Hopper No.	Receiving Hopper		Weight Outfit Complete
	Capacity Cu. Ft.	Weight, Lbs.						Capacity Cu. Ft.	Empty Weight	
		Empty	Full							
107	7	255	1305	5	⅜″	14″	214	14	370	800
114	14	530	2630	10	½″	18″	228	28	590	1340
121	21	570	3720	15	⅝″	18″	242	42	630	1420
128	28	700	4750	20	⅝″	18″	256	56	810	1730
135	35	810	6210	25	¾″	18″	270	70	1120	2170

Tower Fittings

Top Sheaves

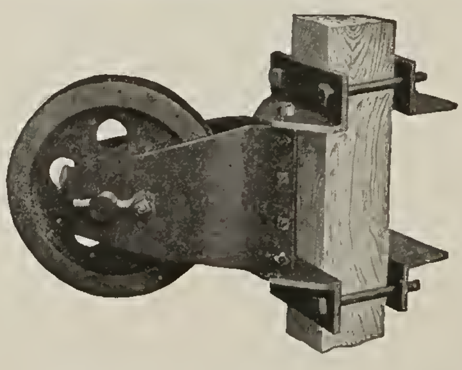


These consist of two sheaves and boxes with lag screws for mounting. 14″ sheaves are furnished with Outfit No. 107, and 18″ on all others, assuring ease of operation and power saving.

T 14. 14″ Top Sheave Set Complete.

T 18. 18″ Top Sheave Set Complete.

Swivel Bottom Sheave



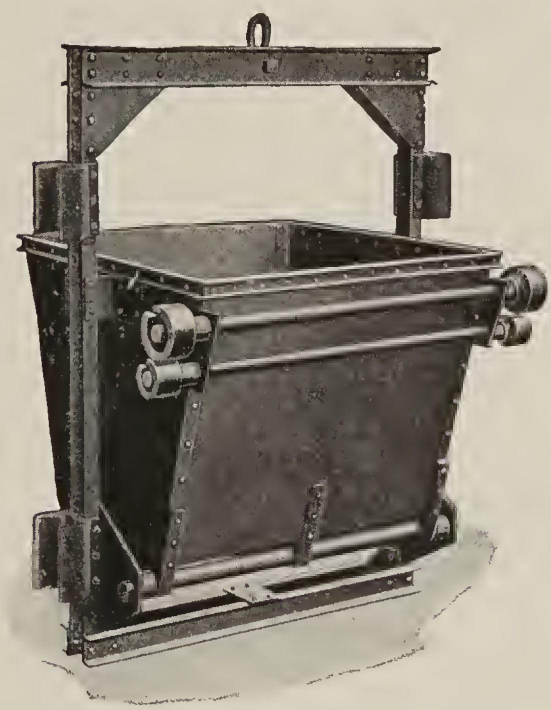
This unit also is built in two sizes;—the 14″ for the No. 107 Tower Outfit and the 18″ for all other sizes.

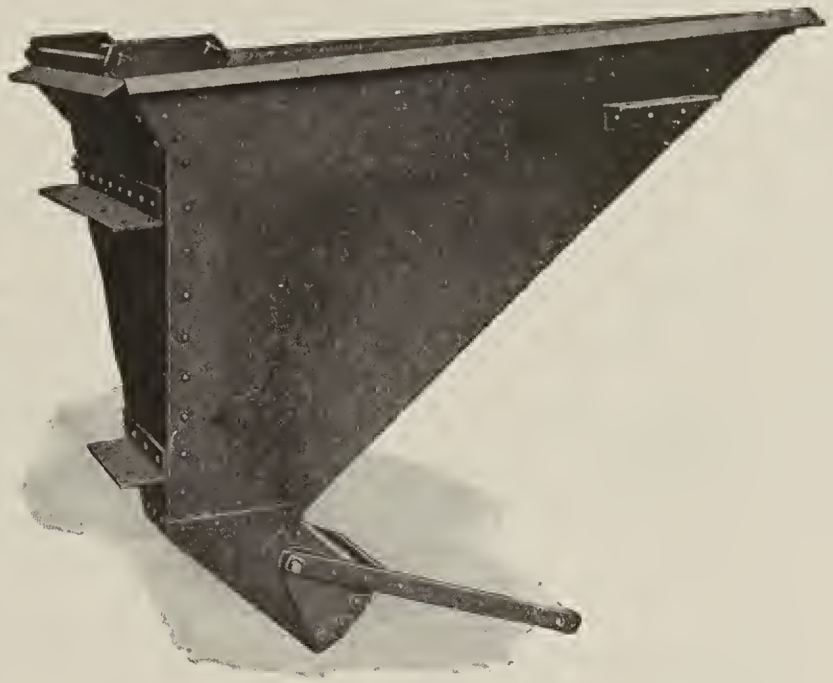
B 14. 14″ Bottom Sheave Complete.

B 18. 18″ Bottom Sheave Complete.

THE ARCHER IRON WORKS

Hoist Tower Fittings





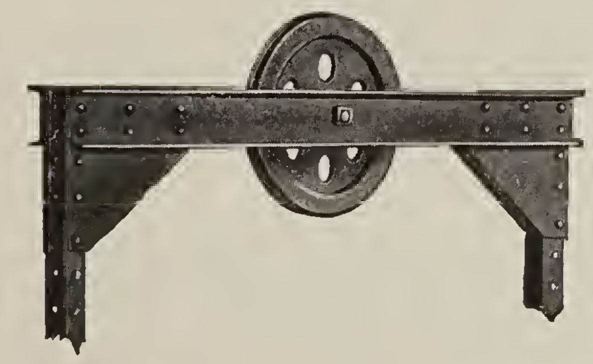
Tower Bucket

List No.	Capacity Cu. Ft.	Weight Lbs.	Wire Rope Required Inches	Horse Power at 100 Ft. per Minute	Use With Hopper Number
107	7	255	⅜	5	214
114	14	530	½	10	228
121	21	570	⅝	15	242
128	28	700	⅝	20	256
135	35	810	¾	25	270

Receiving Hopper

List Number	Capacity Cubic Feet	Weight Pounds	Use with Bucket Number
214	14	370	107
228	28	590	114
242	42	630	121
256	56	810	128
270	70	1120	135

S-14 Sheave for Bucket



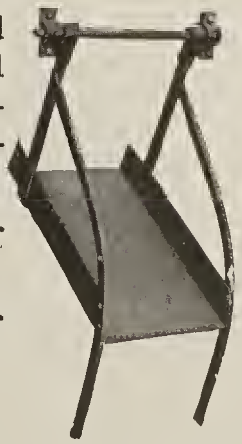
The bucket can be equipped with a 14″ sheave so that it may be operated at half speed at half power.

Swing Chute

This chute is furnished complete with boxes and lag screws ready for installing in standard wooden hoist tower.

No. 316. 16″ wide for No. 107 Outfit.

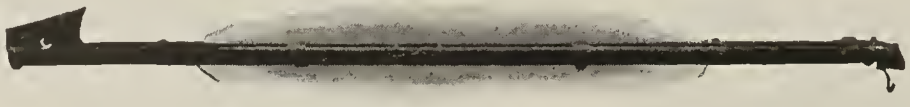
No. 322. 22″ wide for all other size Outfits.



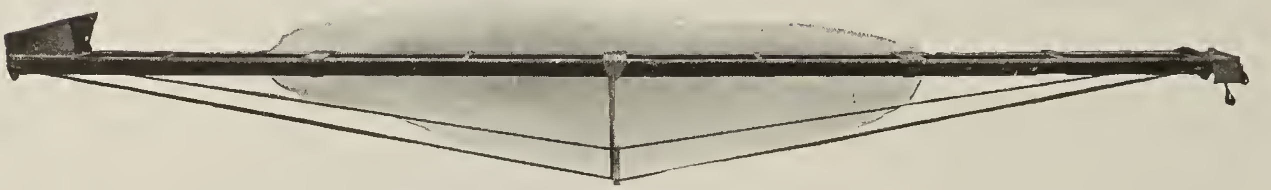
THE ARCHER IRON WORKS

Concrete Spouting

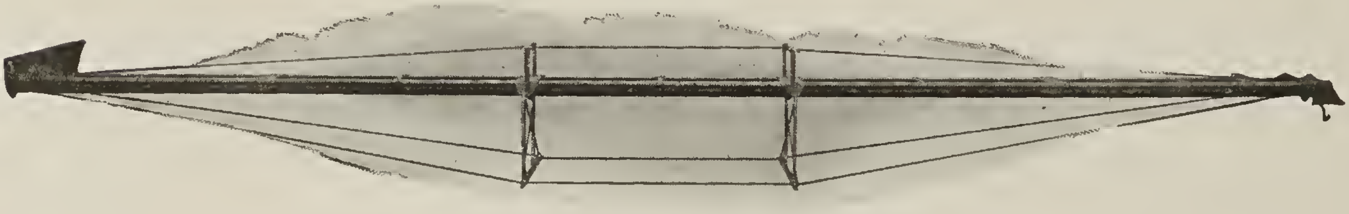
Interchangeability, which provides for great economy and efficiency of equipment, is the essential feature of Archer design.



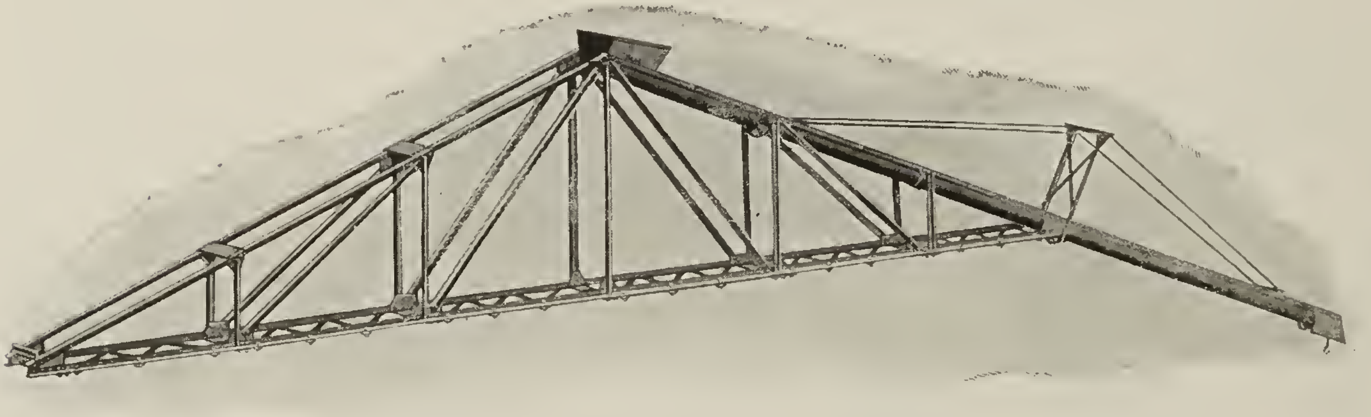
Standard 30 foot spout, No. 30HS



Standard 40 foot spout, No. 40HS



Standard 50 foot spout, No. 50HS

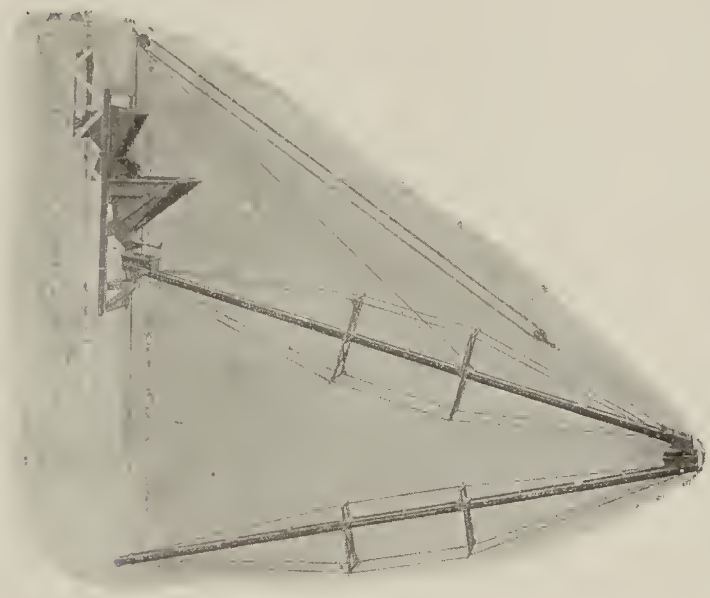


Counterweight spout, No. C40HS and C50HS

Archer counterweight spouts are made in 40 and 50 foot lengths of sufficient strength to carry any standard trussed section at its lower ends. Our standard spouting can be used in constructing counterweight spouts by adding our counterweight frame, which can be readily attached when your work demands this equipment.

THE ARCHER IRON WORKS

Concrete Spouting



Boom Spout Plant

The illustration shows the sliding frame attached to the tower which makes it possible to quickly raise the plant as the building progresses. The boom spout is rigidly braced and can easily support a truss spout at the discharge end of equal length, thus eliminating the necessity of using the open boom. First section, or boom spout, made in 40 or 50 foot lengths.

No. B50HS—50 Ft. Spout

No. B40HS—40 Ft. Spout

No. 25

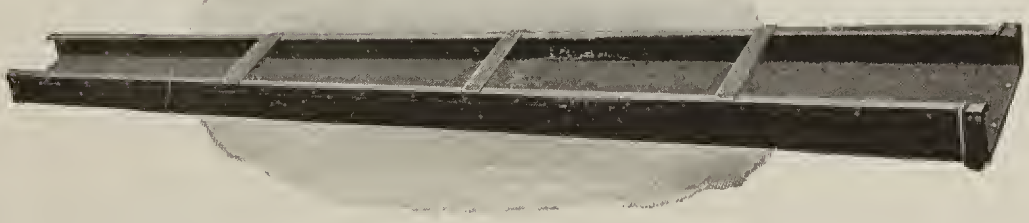
Flexible Spouting

Flexible spouting proves itself a great convenience and time saver in the distribution of concrete. It is used for conveying the concrete from either the discharge end of the main line or from a linegate directly to the spot desired. On special work such as sewer, tunnel or conduit, it will prove an efficient time saver. It is built ruggedly, of 14 gauge steel in 3 foot lengths, 10 inches in diameter and tapered to insure ease of handling.

No. 26—Hopper for Flexible Spouting

Tapered Chutes

Tapered chutes resting on wooden horses are quickly moved and their use eliminates the necessity of frequently shifting the main line. Made in 10 foot lengths.

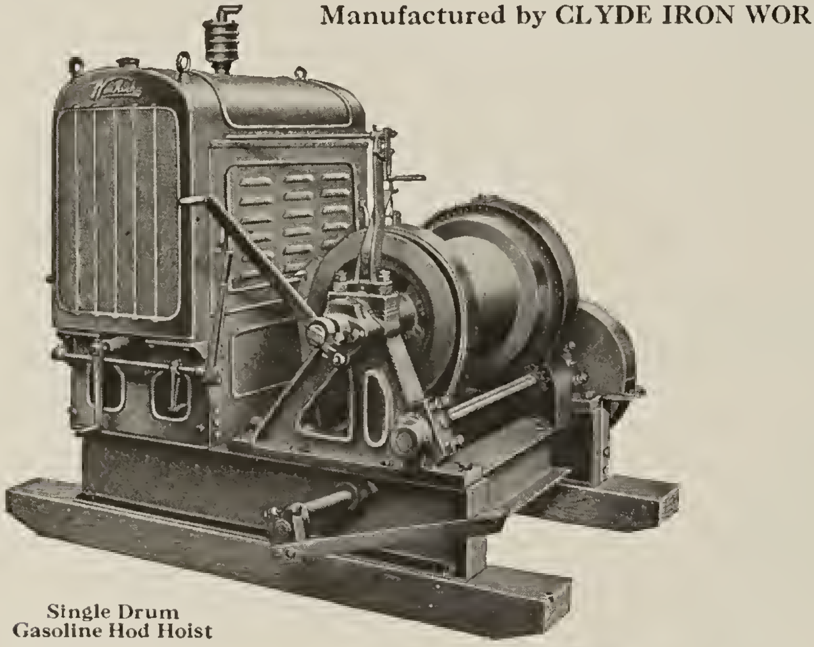


No. 1501—10 foot

SPECIAL GASOLINE HOISTS

Chain Drive

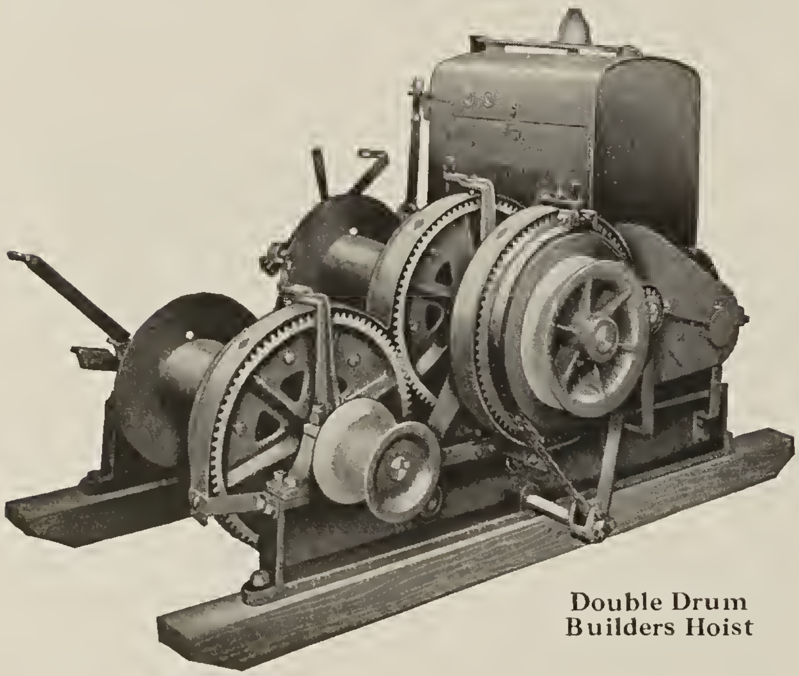
Manufactured by CLYDE IRON WORKS, Duluth, Minnesota



Single Drum Gasoline Hod Hoist

This machine is especially designed for handling light loads at a high rate of speed. With the exception of a larger diameter drum it is quite similar to the single drum contractor's hoist embodying the same features, such as free engine clutch, steel bed plate, machine cut gears, chain drive enclosed in a housing, and bronze bushing on the drum.

Catalog Number	H.P.	Maximum Load		Drums		Approximate Shipping Weight
		Pounds	F.P.M.	Diam.	Length	
6885	30	1800	350	16	16	2900
6886	35	1800	450	18	20	4200
6887	35	2300	350	18	20	4200
6888	45	3000	350	18	24	4700
6889	55	3500	350	18	24	4800
6892	70	4000	350	20	26	7100
6893	80	5000	350	20	25	7200



Double Drum Builders Hoist

The elevator sheave on the above hoists operates separately from the drums, the sheave having an entirely independent driving mechanism. This independent operation of the drums and sheave makes it possible to handle a bucket elevator and two-cage material elevator intermittently without the necessity of changing cables. The drum is friction driven of the same type as used on standard non-reversing hoists.

SEMI-STEEL GEARS, CUT TEETH

Catalog Number		Hoisting Duty		Motor Horse Power	Drums		Sheave			Approximate Shipping Weight, Pounds	
1 Drum	2 Drums	Load Pounds	Feet Per Min.		Diam. Inches	Length Between Flanges Inches	Load Pounds	Feet Per Min.	Diam. Inches	1 Drum	2 Drum
6760	6770	2500	150	15	8	15	1400	240	14	2700	3300
6761	6771	3000	150	20	8	15	1400	240	14	2600	3400
6762	6772	3500	150	30	8	16	1400	400	18	3800	4750
6763	6773	4000	170	35	12	17	2200	300	21	5900	7400

The horsepower rating of gasoline motors as given by motor manufacturers is usually figured on the cubic inches of cylinder displacement and does not give the actual duty the motor will deliver.

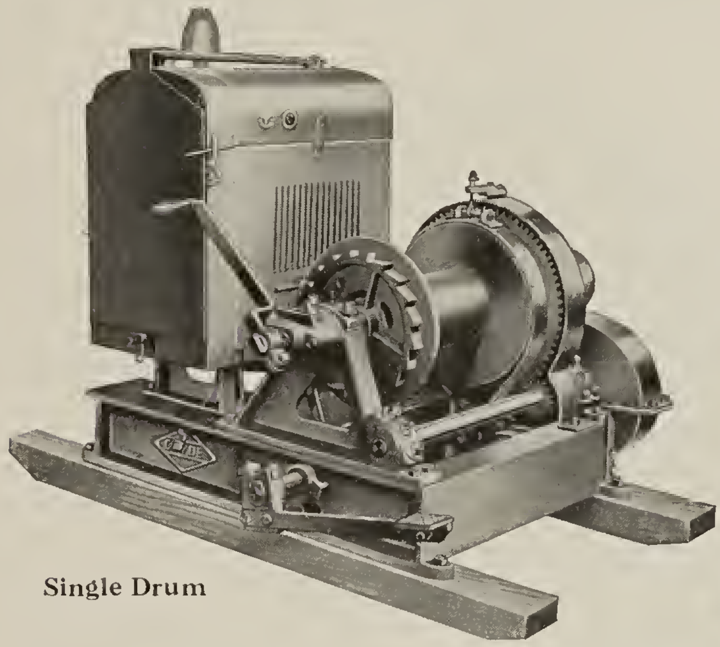
The horsepower ratings given in our tables are taken from the actual brake horsepower delivered by the motor crank shaft. These tests are furnished us by the manufacturers of the motors we use.

Our tables show the duty the hoist will deliver on the line in actual operation under average conditions. These ratings are ample to handle the load without stalling the motor when the full load is thrown on the hoist.

GASOLINE HOISTS

Chain Drive

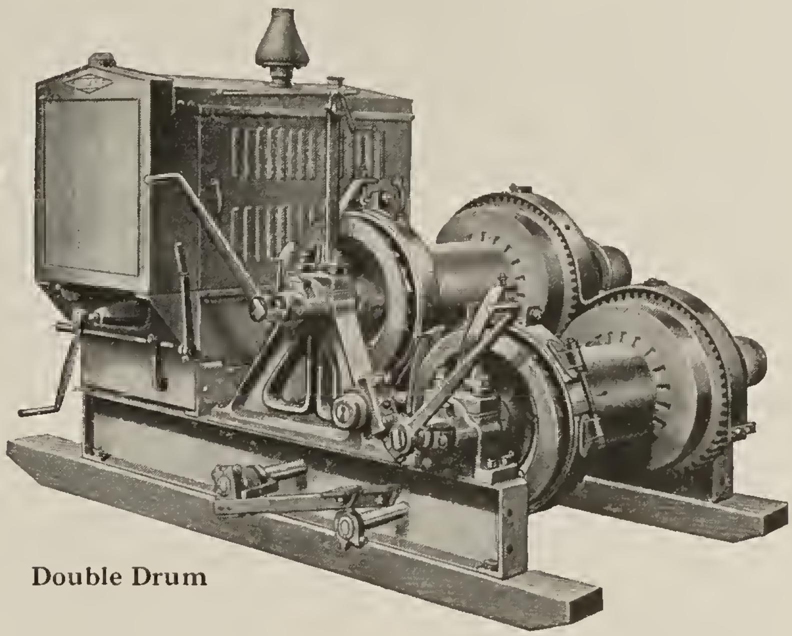
Manufactured by CLYDE IRON WORKS, Duluth, Minnesota



Single Drum

Single drum gasoline hoists are widely used for construction work, mast hoist buckets, elevators, haulage purposes, steel erection and many other uses.

Clyde gasoline hoists are economical and efficient. The hoisting drum is equipped with double cone frictions and the same thrust mechanism used on Clyde steam hoists.



Double Drum

Double drum gasoline hoists are best suited for general service, operating derricks, elevators, steel handling, stone setting and scraper work.

On account of its easy portability and perfect performance, the Clyde gasoline hoist is a favorite with contractors.

This hoist may be furnished with three drums or derrick swinging gear if desired.

The hoisting drum and gasoline motor with all accessories are mounted on a substantial bed plate and each hoist is a complete self-contained unit. The motors are direct connected to the hoist with a chain drive inclosed in a housing and are complete with fuel tank, radiator, fan, automatic throttling governor, and all accessories ready to run.

The hoists are furnished with winch head, asbestos lined foot brake, ratchet and pawl.

All motors, 25 horsepower and larger are equipped with free engine clutch.

All 80 and 100 horsepower motors are equipped with electric starters.

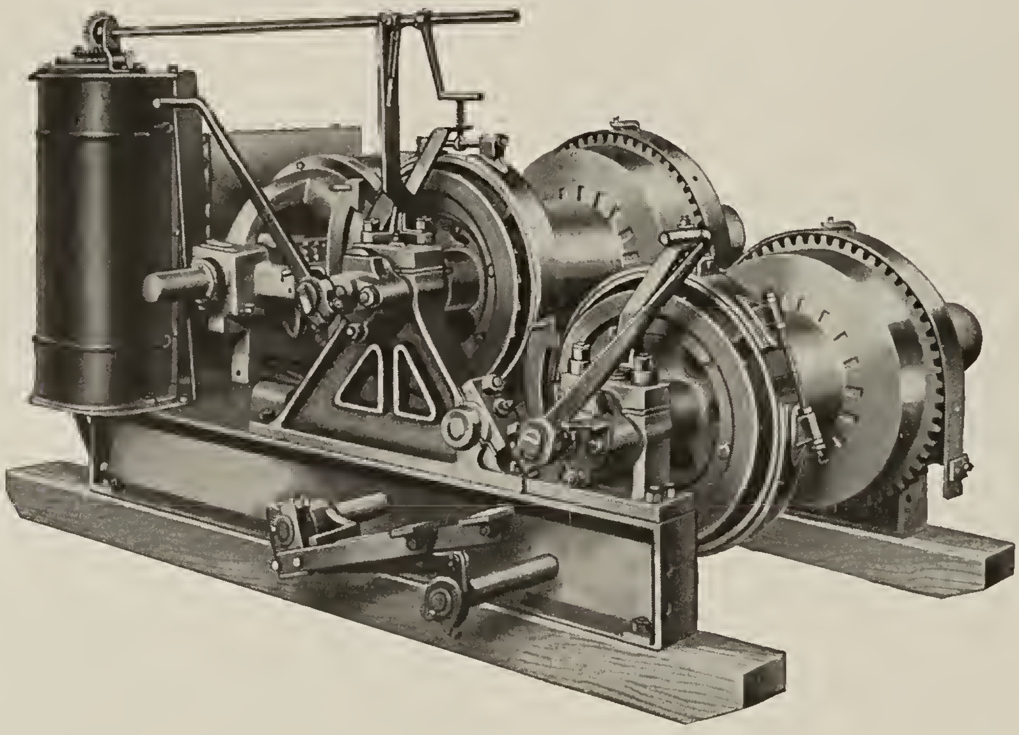
DOUBLE FRICTION DRUM GASOLINE HOIST

Catalog Number	Horse Power	MAXIMUM LOAD		DRUMS		MATERIAL		Approximate Shipping Weight
		Pounds	F.P.M.	Diam.	Length	Gears	Bed	
6831	8	1500	110	6	9	Semi-steel	Semi-steel	1700
6833	15	2500	150	8	15	"	"	2600
6834	20	3000	150	8	15	"	"	2700
6835	30	3500	200	10	16	"	Steel	3700
6836	35	4500	150	12	20	"	"	5600
6837	45	4000	250	12	24	Steel	"	6100
6838	45	5000	200	12	24	"	"	6100
6839	55	5000	250	12	24	"	"	6200
6840	55	6000	200	14	26	"	"	8400
6841	70	6500	250	14	26	"	"	9300
6842	70	7500	200	14	26	"	"	9300
6843	80	7500	250	14	26	"	"	9500
6844	80	9000	200	16	28	"	"	11200
6845	100	9000	250	16	28	"	"	11400
6846	100	12000	200	18	30	"	"	14400
6847	120	10000	250	18	30	"	"	14400
6848	120	13000	200	18	30	"	"	14400

ELECTRIC HOIST, TWO DRUM

Chain Drive

Manufactured by CLYDE IRON WORKS, Duluth, Minnesota



The hoist complete includes motor, controller, resistance, multiple-leaf chain drive, asbestos lined foot brakes, winch head, ratchets and pawls.

Clyde electric hoists are built in a wide range of sizes from 5 to 175 horsepower, with single line capacities from 1000 lbs. to 20,000 lbs. The linespeeds vary depending on the work for which the hoist is to be used.

Electric hoists are furnished with one, two or three drums as required. Two or three drum electric hoists may be equipped with derrick swinging gears, which bolt directly to the front of the hoist.

Motors suitable for any voltage and current can be supplied.

All gears and pinions have machine cut teeth, hoists having a line pull of 4500 lbs. or more being equipped with steel gears and pinions.

Clyde electric hoists are used for numerous purposes: the most common uses are for derrick operations, concrete tower work, where one drum handles the bucket, a second the forms; scraper work, haulage, cage and skip work, quarry work, and when furnished with three drums, handling a clamshell or orange peel bucket.

Electric hoists with independently operated reversible builders sheave for handling single or double cage material elevators are included in the Clyde line.

High speed hoists for concrete tower work may also be equipped with large diameter drums, outside band frictions, asbestos lined band brakes on the opposite end from the friction and face forward levers.

Clyde electric hoists have been developed by a constant appreciation of electrical and mechanical conditions; consequently, to produce a hoist best adapted for any particular condition, as complete a description as possible should be given of the service to which it will be put, essentially:

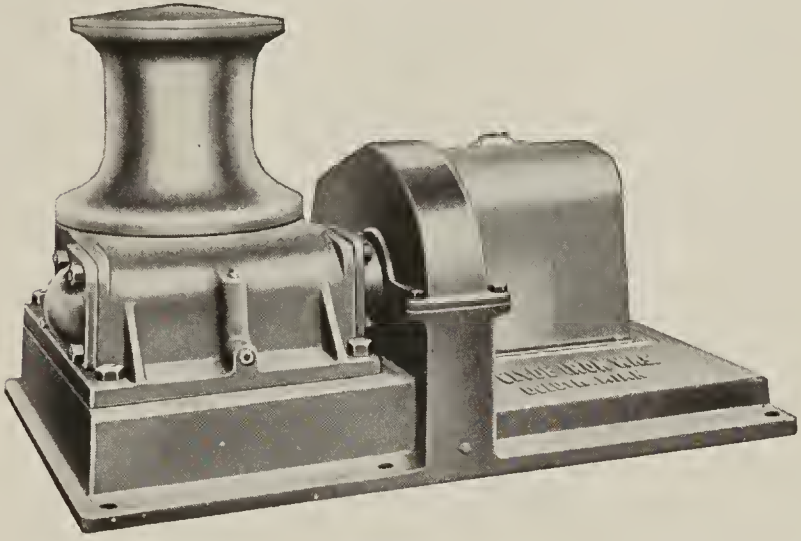
Maximum load to be lifted.
Average load to be lifted.
Average hoisting speed.
Height of lift.

Number of trips a day.
Direct or alternating current.
If a.c., number of phases and cycles.
Voltage.

Solenoid brake, automatic brake, or banked levers are furnished at an additional price, if desired.

ELECTRIC CAR-PULLERS

Manufactured by CLYDE IRON WORKS, Duluth, Minnesota



Capstan Type

Capstan car movers are used by manufacturing and sand and gravel plants, stone quarries, etc., at their car sidings for the purpose of moving railroad cars to and from the loading and unloading stations.

The carpuller consists of a vertical capstan driven through spur and worm gearing by an electric motor. All gears run in a bath of oil, insuring perfect lubrication. All gearing has machine cut teeth. The worm has a double acting, roller thrust bearing so the motor can rotate in either direction. A high starting torque motor is provided and all power transmitting parts are totally enclosed in a dust and weatherproof housing.

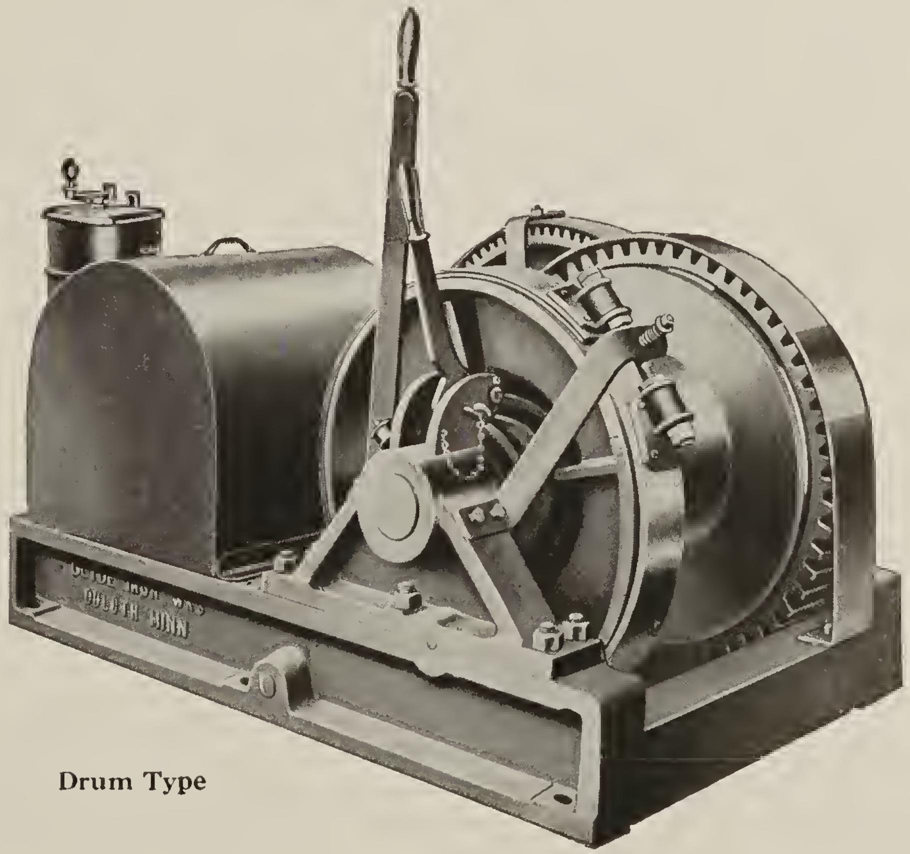
Capstan carpullers are furnished with motors from 5 to 10 horsepower. From three to eight loaded cars can be moved by a capstan carpuller depending on the size of motor, condition of track, grade, curvature of track, etc.

Drum type car movers as illustrated are used by manufacturing plants, stone quarries, etc., for heavy loads and up grades.

The drum is equipped with a powerful, asbestos lined, adjustable, hand operated band brake for controlling the lowering speed. It also has a jaw clutch so the rope can be pulled out without running the motor. It is equipped with a high starting torque motor with reversing drum type controller and resistor. The motor is enclosed in a dust and weatherproof housing. The motor is direct connected to the drum through a train of spur gears, all mounted on a substantial cast bed plate, making a complete, self-contained unit. All gearing has machine cut teeth. The intermediate gear driven by the motor pinion is semi-steel. All other gears are cast steel. All pinions are forged steel.

Carpullers of the drum type are equipped with 10 or 15 horsepower motors. From eight to eighteen cars can be moved at one time, subject to size of motor, condition and curvature of track, grade, etc.

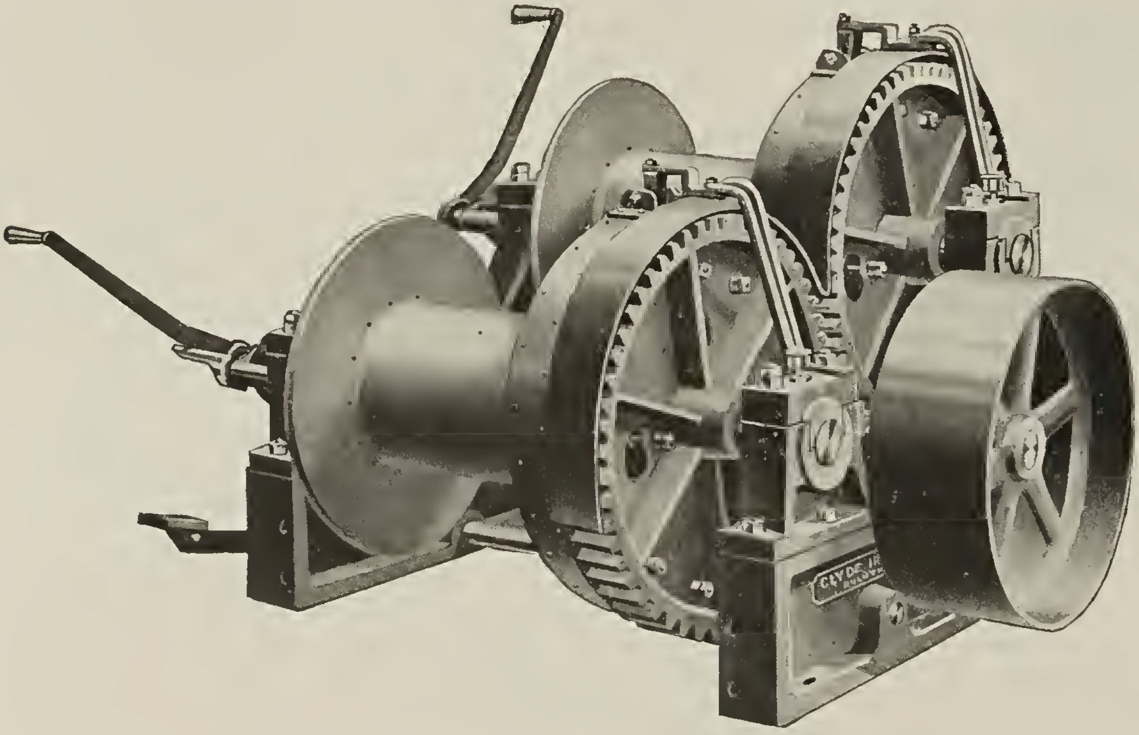
We can furnish motors for any current or voltage. (State current characteristics when requesting prices.)



Drum Type

BELT HOIST, TWO DRUM

Manufactured by CLYDE IRON WORKS, Duluth, Minnesota



The above illustration represents our two-drum belt hoist. This is a compact, substantially built machine and is suitable for general derrick work and around docks, warehouses, quarries and railroads. It is operated by a belt from a line shaft or any independent source of power. We can furnish at an extra cost a tight and loose pulley in place of the fixed pulley.

SEMI-STEEL GEARS, CUT TEETH

Catalog Number	Hoisting Duty Single Line, Lbs.	Normal Line Speed F.P.M.	DRUMS		PULLEY			Size Bed Inches	Horse Power to drive, at given Load and Speed	Approximate Shipping Weight Lbs.
			Diameter Inches	Length Between Flanges Inches	Diameter Inches	Face Inches	Normal Speed R.P.M.			
2398	1000	125	6	9	15	4	300	24x40	5	1100
2399	2000	125	7	12	20	4½	300	30x45	10	1600
2400	3000	135	12	16	30	6½	180	37x50	15	3000
2401	4500	150	14	17	36	8½	180	44x58	25	4500

STEEL GEARS, CUT TEETH

2402	7000	150	14	22	40	10½	190	51x59	40	5500
2403	10000	165	14	23	48	12½	200	55x66	60	6800
2404	13000	180	18	30	56	12½	190	62x78	90	8800

These hoists are furnished complete as shown, with belt pulley, asbestos lined foot brakes, ratchets and pawls, but cannot be furnished with winch heads. Size of pulley may be changed to suit conditions.

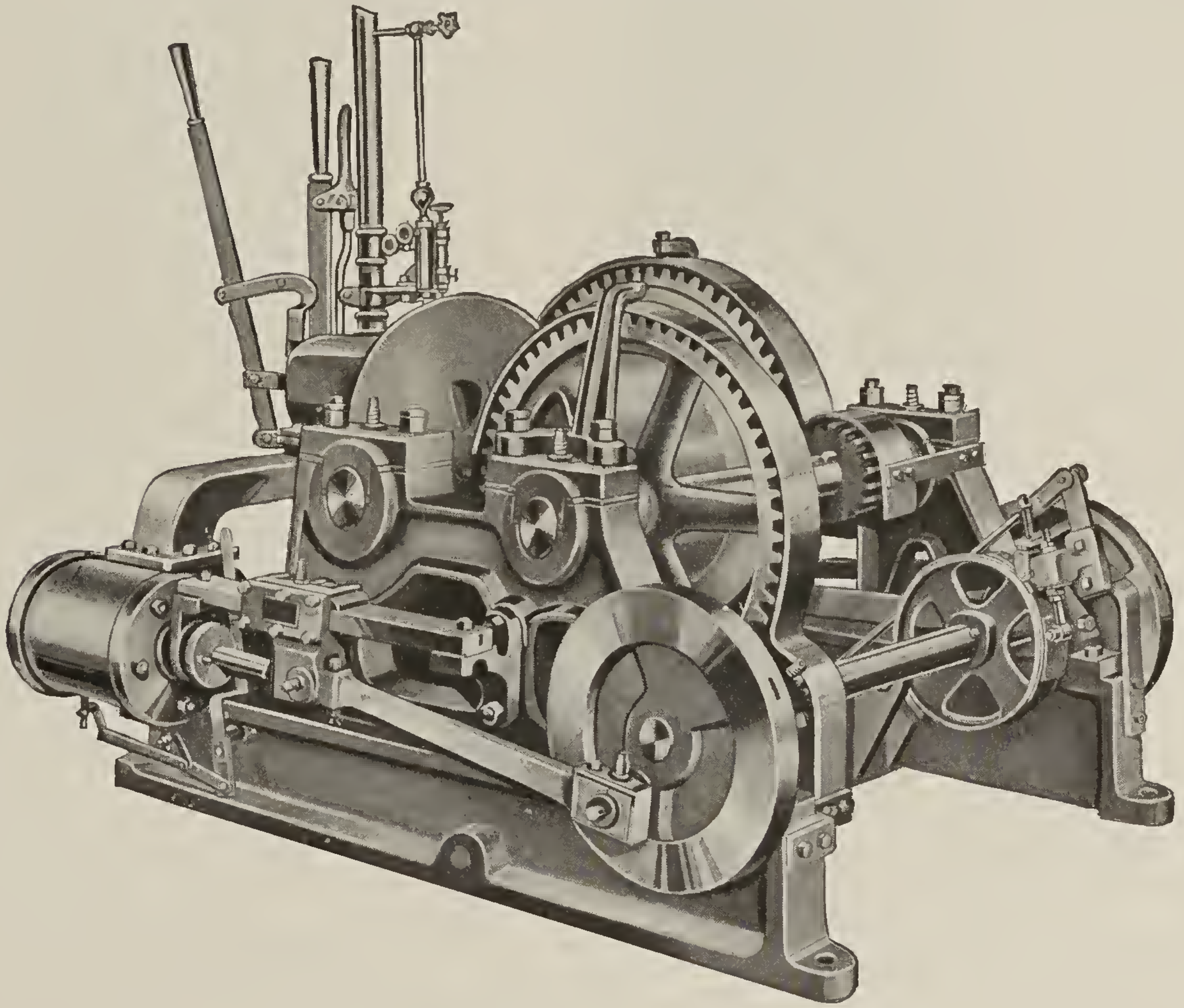
Similar hoists except equipped with one or three drums can be furnished. Derrick swinging gears can also be supplied, which will attach directly to two or three drum hoists.

NOTE—The amount of horsepower necessary to drive these hoists will be increased or reduced in direct proportion as the hoisting speed is increased or reduced.

SWINGING ENGINE, DOUBLE CYLINDER, COMPOUND GEARED

With Reversing Valve

Manufactured by CLYDE IRON WORKS, Duluth, Minnesota



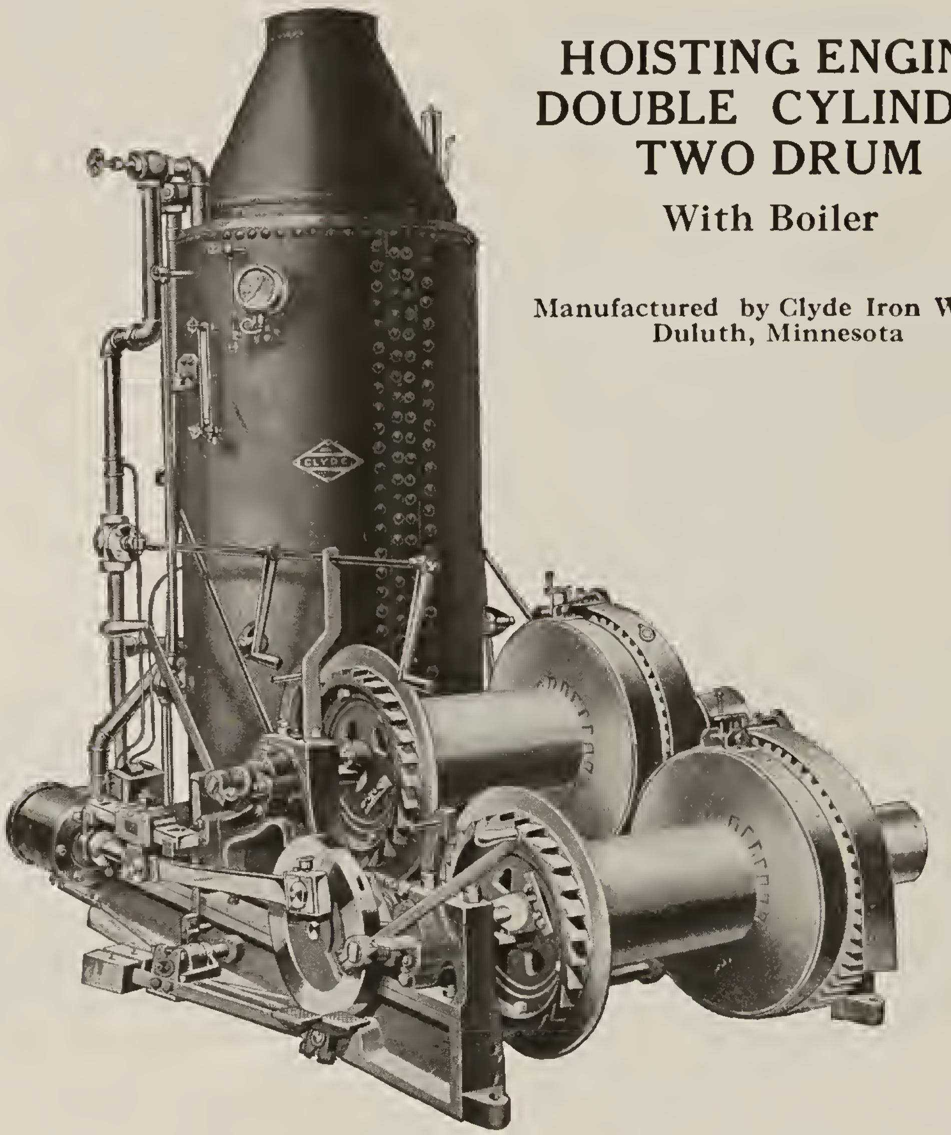
This engine is specially designed for swinging booms on heavy barge derricks, dredges, or in any class of heavy derrick work. It is designed with extra heavy shafting and long bearings to withstand the severe strains encountered in dredge work. The gearing is compounded to reduce speed and increase the pulling capacity. **A brake is furnished,** operated by a latched hand lever, by means of which the operator can control the boom in swinging.

The entire engine is simple and compact in design and is built especially strong for severe duty

SPECIFICATIONS

Catalog Number	Size Cylinders Inches Bore Stroke	Horse Power	Size of Bed Inches	Maximum Width of Engine Over All Inches	Swinging Drums		Maximum Pulling Capacity Pounds	Ratio of Gearing	Material in Gears	Approx. Shipping Weight Pounds
					Diam. Inches	Length Between Flanges Inches				
510	4¾x 6	12	38x52	50	14	15	7000	17 to 1	Semi-Steel	3000
513	6¼x 8	20	44x62	61	16	18	15000	20 to 1	Steel	4800
514	7 x10	30	48x66	66	16	19	20000	20 to 1	Steel	5600

These engines furnished complete as shown, with latched hand brake, and all lubricating devices. All gears have cut teeth.



HOISTING ENGINE
DOUBLE CYLINDER
TWO DRUM
With Boiler

Manufactured by Clyde Iron Works,
Duluth, Minnesota

SEMI-STEEL GEARS, CUT TEETH

Catalog Number	Size Cylinders Inches Bore Stroke	Horse Power	Size of Bed Inches	DRUMS		Load Capacity on Single Line at Normal Speed Pounds	Weight Pile Driver Hammer for Rapid Work Pounds	BOILER			Approx. Shipping Weight Pounds
				Diam. Inches	Length Between Flanges Inches			Diam. Inches	Length Inches	No. 2-Inch Flues	
101	4¾x 6	12	40x 75	8	18	3000	1200	30	72	52	5000
102	5½x 8	16	49x 85	12	22	4000	2000	36	72	76	7700
103	6¼x 8	20	49x 85	14	22	4500	2200	36	72	76	7900
104	6¼x10	25	56x 92	14	27	5500	2800	42	90	96	10700
105	7 x10	30	56x 92	14	27	7000	3200	42	90	96	11100

STEEL GEARS, CUT TEETH

106	7 x10	30	56x 92	14	27	7000	3200	42	90	96	11100
107	8¼x10	40	60x 97	14	28	9000	4000	42	102	96	13400
108	8¼x10	40	72x105	14	39	9000	4000	48	102	128	15200
109	9 x10	50	60x 97	14	28	10000	4500	42	114	96	13900
110	9 x10	50	72x105	14	39	10000	4500	48	114	128	15700
111	10 x10	60	70x120	18	39	11000	5000	54	102	180	19700
112	10 x12	70	70x120	18	39	13000	5500	54	108	180	21500
113	11 x13	85	72x146	18	38	16000	....	60	120	216	28500
114	12 x14	100	72x162	18	37	20000	....	66	120	308	34000

Similar hoists can also be furnished without boiler, with one or three drums, also with attached bull wheel swinging gear (on the 2 or 3 drum).

11 x 13 and 12 x 14 hoists are built with outside valve motion.

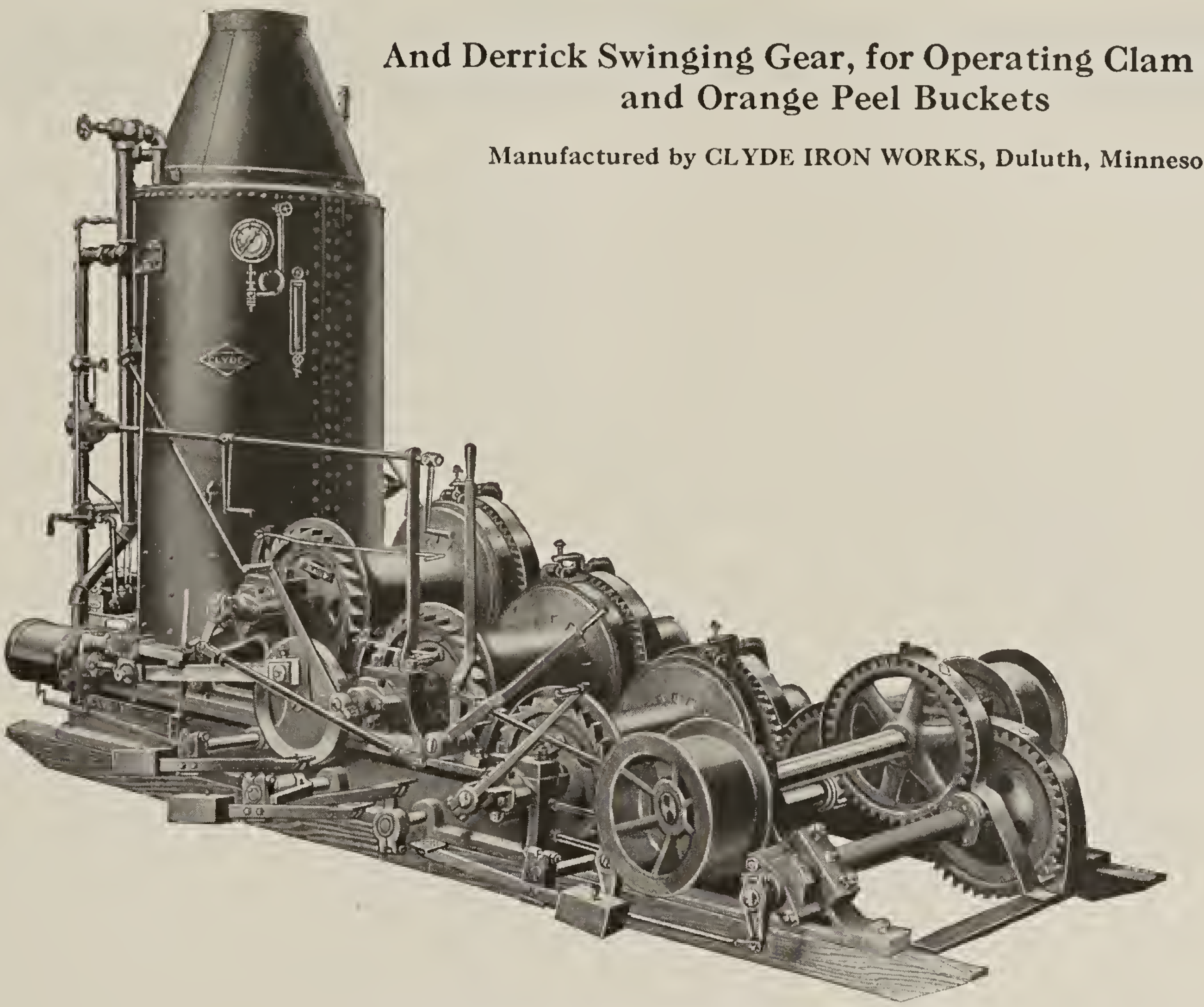
All hoists are furnished complete as shown, with asbestos lined foot brake and fixed winch head on end of each drum shaft.

HOISTING ENGINE, THREE DRUM, DOUBLE CYLINDER

With Boiler

And Derrick Swinging Gear, for Operating Clam Shell and Orange Peel Buckets

Manufactured by CLYDE IRON WORKS, Duluth, Minnesota



SEMI-STEEL GEARS, CUT TEETH

Catalog Number	Size Cylinders Inches Bore Stroke	Horse Power	Size Bed Including Swinger Inches	Hoisting Drums		Load Capacity on Single Line at Normal Speed Pounds	BOILER			Swinging Drums		No. of Revolutions of Hoisting Drums to One of Swinging Drums	Approximate Shipping Weight Pounds
				Diam. Inches	Length Between Flanges Inches		Diam. Inches	Length Inches	No. 2-inch Flues	Diam. Inches	Length Between Flanges Inches		
450	5½x 8	16	49x182	12	22	4000	36	72	76	16	12	4	13100
451	6¼x 8	20	49x182	14	22	4500	36	72	76	16	12	4	13400
452	6¼x10	25	56x190	14	27	5500	42	90	96	16	12	4	15600
453	7 x10	30	56x190	14	27	7000	42	90	96	16	12	4	15900

STEEL GEARS, CUT TEETH

454	7 x10	30	56x190	14	27	7000	42	90	96	16	12	4	15900
455	8¼x10	40	60x204	14	28	9000	42	102	96	16	14	4	19300
456	8¼x10	40	72x212	14	39	9000	48	102	128	16	14	4	22300
457	9 x10	50	60x204	14	28	10000	42	114	96	16	14	4	19800
458	9 x10	50	72x212	14	39	10000	48	114	128	16	14	4	22800
459	10 x10	60	70x246	18	39	11000	54	102	180	18	15	4½	27700
460	10 x12	70	70x248	18	39	13000	54	108	180	18	15	4½	29700
461	11 x13	85	72x262	18	38	16000	60	120	216	20	15	4½	39500
462	12 x14	100	72x282	18	37	20000	66	120	308	20	15	4½	47700

11 x 13 and 12 x 14 hoists are built with outside valve motion. All hoists are furnished complete as shown, with asbestos lined foot brakes.

Swinger is complete with hand friction lever and latched brake lever.

Forward and middle drum shaft extensions are fitted with fixed winch heads.

Rear drum gear is bronze bushed and runs free on the shaft.

Similar hoists can be furnished except without boiler.

O&S
GASOLINE HOISTING ENGINES

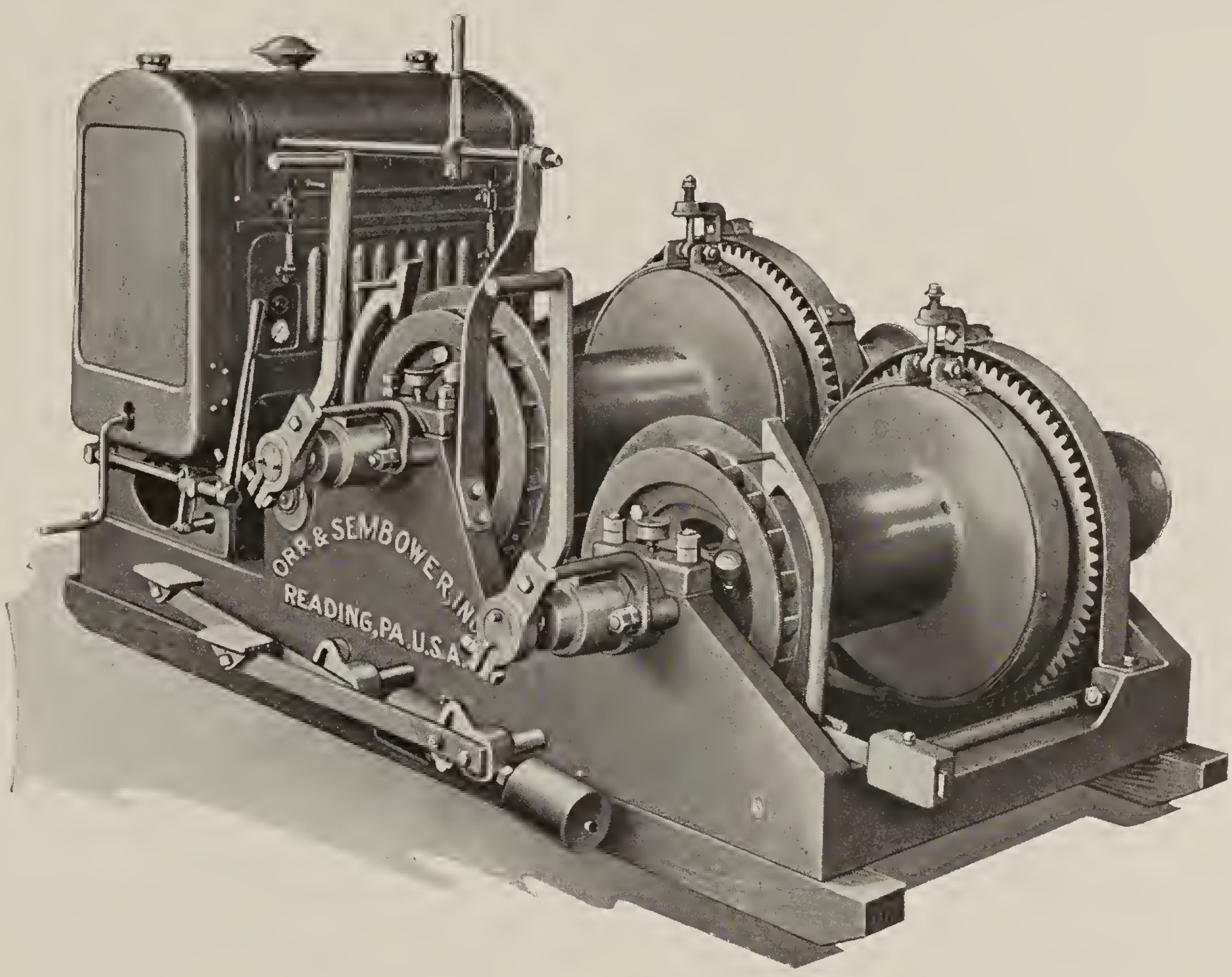
SINGLE DRUM HOIST SPECIFICATIONS

Code Word	Hoist No.	Motor Horse Power	Hoisting Drums				Line Speed and Single Line Pull Based on Two Inches of Rope on Barrel		Size of Bed Plate Width by Length Inches	Approximate Shipping Weight Complete Lbs.	Approximate Cubic Feet Crated For Export	Approximate Shipping Weight Crated For Export Lbs.
			Diameter Inches	Length Barrel Inches	Rope Capacity Feet	Recommended Size of Rope Inches	Maximum Single Line Pull Lbs.	Average Line Speed Ft. Per Min.				
Casj	1800 -G	5	8	8	315	⅜	600	155	22 x 41	900	40	1050
Cedil	1900 -G	5	8	8	315	⅜	525	185	22 x 41	900	40	1050
Cedul	1801 -G	10	8	10	715	⅜	1400	160	25 x 44	1300	55	1500
Celad	1901 -G	10	8	10	715	⅜	1150	195	25 x 44	1300	55	1500
Croo	1802¼-G	15	8	14	760	½	2100	165	31 x 51	1700	80	2000
Cror	1902¼-G	15	8	14	760	½	1800	200	31 x 51	1700	80	2000
Cros	2002¼-G	15	8	14	760	½	1500	240	31 x 51	1700	80	2000
Crot	1802½-G	20	8	20	1000	½	2700	165	38 x 51	2100	95	2550
Crou	1902½-G	20	8	20	1000	½	2200	200	38 x 51	2100	95	2550
Croz	2002½-G	20	8	20	1000	½	1800	240	38 x 51	2100	95	2550
Cruc	1803¼-G	25	10	20	1600	½	3300	165	38 x 56	3100	110	3600
Crud	1903¼-G	25	10	20	1600	½	2800	200	38 x 56	3100	110	3600
Crudi	2003¼-G	25	10	20	1600	½	2300	240	38 x 56	3100	110	3600
Crue	2103¼-G	25	10	20	1600	½	1800	300	38 x 56	3100	110	3600
Cruis	1803½-G	30	10	20	1600	½	4000	165	38 x 56	3250	110	3800
Crul	1903½-G	30	10	20	1600	½	3300	200	38 x 56	3250	110	3800
Crum	2003½-G	30	10	20	1600	½	2600	240	38 x 56	3250	110	3800
Cruo	2103½-G	30	10	20	1600	½	2200	300	38 x 56	3250	110	3800
Custu	1804¼-G	40	12	23	1400	⅝	4800	170	43 x 59	4100	145	4700
Cuta	1904¼-G	40	12	23	1400	⅝	4000	200	43 x 59	4100	145	4700
Cutti	2004¼-G	40	12	23	1400	⅝	3200	250	43 x 59	4100	145	4700
Cyan	2104¼-G	40	12	23	1400	⅝	2700	300	43 x 59	4100	145	4700

DOUBLE DRUM HOIST SPECIFICATIONS

Code Word	Hoist No.	Motor Horse Power	Hoisting Drums				Line Speed and Single Line Pull Based on Two Inches of Rope on Barrel		Size of Bed Plate Width by Length Inches	Approximate Shipping Weight Complete Lbs.	Approximate Cubic Feet Crated For Export	Approximate Shipping Weight Crated For Export Lbs.
			Diameter Inches	Length Barrel Inches	Rope Capacity Feet	Recommended Size of Rope Inches	Maximum Single Line Pull Lbs.	Average Line Speed Ft. Per Min.				
Centig	1810 -G	5	8	8	315	⅜	600	155	22 x 58	1200	55	1400
Centil	1910 -G	5	8	8	315	⅜	525	185	22 x 58	1200	55	1400
Centim	1811 -G	10	8	10	715	⅜	1400	160	25 x 65	1700	66	2000
Centip	1911 -G	10	8	10	715	⅜	1150	195	25 x 65	1700	66	2000
Crup	1812¼-G	15	8	14	760	½	2100	165	31 x 76	2600	115	2900
Crur	1912¼-G	15	8	14	760	½	1800	200	31 x 76	2600	115	2900
Crut	2012¼-G	15	8	14	760	½	1500	240	31 x 76	2600	115	2900
Cryo	1812½-G	20	8	20	1000	½	2700	165	38 x 76	3000	140	3350
Cryp	1912½-G	20	8	20	1000	½	2200	200	38 x 76	3000	140	3350
Crys	2012½-G	20	8	20	1000	½	1800	240	38 x 76	3000	140	3350
Cuar	1813¼-G	25	10	20	1600	½	3300	165	38 x 86	4100	160	4800
Cubi	1913¼-G	25	10	20	1600	½	2800	200	38 x 86	4100	160	4800
Cucu	2013¼-G	25	10	20	1600	½	2300	240	38 x 86	4100	160	4800
Cuf	2113¼-G	25	10	20	1600	½	1800	300	38 x 86	4100	160	4800
Cufi	1813½-G	30	10	20	1600	½	4000	165	38 x 86	4250	160	5000
Cuir	1913½-G	30	10	20	1600	½	3300	200	38 x 86	4250	160	5000
Cule	2013½-G	30	10	20	1600	½	2600	240	38 x 86	4250	160	5000
Culi	2113½-G	30	10	20	1600	½	2200	300	38 x 86	4250	160	5000
Cybe	1814¼-G	40	12	23	1400	⅝	4800	170	43 x 90	5200	210	6000
Cyca	1914¼-G	40	12	23	1400	⅝	4000	200	43 x 90	5200	210	6000
Cyclo	2014¼-G	40	12	23	1400	⅝	3200	250	43 x 90	5200	210	6000
Cylin	2114¼-G	40	12	23	1400	⅝	2700	300	43 x 90	5200	210	6000

O&S
GASOLINE HOISTING ENGINES



Double Drum Gasoline Hoist

THIS line of hoists has been designed to meet the many demands in the contracting field for a well built and reliable Gasoline Hoist. It is a combination of our latest friction drum hoist with a gasoline engine of a well known make, the five H.P. being single cylinder and the larger sizes multiple cylinder. The five to twenty H.P. hoists, inclusive, are equipped with LeRoi or Fuller & Johnson engines, and the twenty-five to forty H.P. hoists are equipped with Hercules engines. All engines are of the radiator cooled type and include air cleaners.

The drums are bronze bushed and equipped with a powerful foot brake, ratchet and pawl and improved thrust device. By means of the latter, friction is reduced to the minimum and all chance of heating of the pin and screw is removed as the thrust is distributed over three discs revolving in oil. The center disc is phosphor bronze and the other two steel. All gears are high grade semi-steel with machine cut teeth, and all pinions forged steel with cut teeth. Extra heavy precision ground shafting is used in these hoists. Gatke asbesgraphite composition friction blocks are used on all hoists above 10 H.P.

To find suitable weight for pile driving, take 40% of maximum single line pull.

Attention is called to the fact that as the rope winds on the drum, the hoisting speed is increased and the pulling capacity decreased. Our customers will be served best where exact load and speed requirements are determined before order is placed, and we recommend operating with a load not to exceed 80 per cent. of the rated line pull. This holds true with any hoist, especially where sudden starting and stopping are required.

O&S
ELECTRIC HOISTING ENGINES

SINGLE DRUM HOIST SPECIFICATIONS

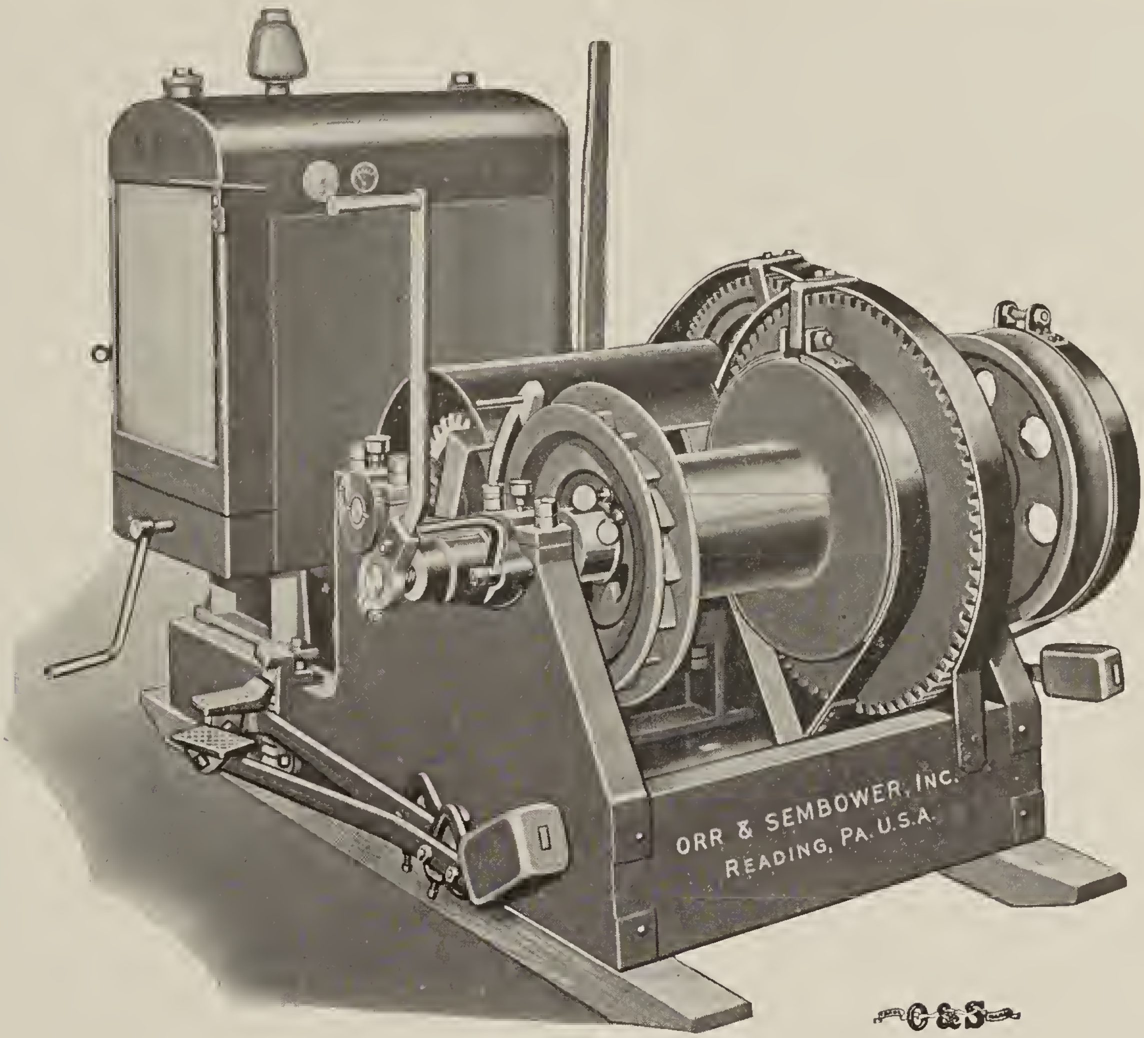
Code Word	Hoist No.	Motor Horse Power	Hoisting Drums				Line Speed and Single Line Pull Based on Two Inches of Rope on Barrel		Size of Bed Plate Width by Length Inches	Approximate Shipping Weight Complete Lbs.	Approximate Cubic Feet Crated For Export	Approximate Shipping Weight Crated For Export Lbs.
			Diameter Inches	Length Barrel Inches	Rope Capacity Feet	Recommended Size of Rope Inches	Maximum Single Line Pull Lbs.	Average Line Speed Ft. Per Min.				
Cerus	1800- E	3	8	8	315	⅜	500	155	22 x 41	900	35	1050
Cervo	1900- E	3	8	8	315	⅜	425	185	22 x 41	900	35	1050
Cesto	1801- E	7½	8	10	715	⅜	1200	160	25 x 44	1350	50	1550
Cestu	1901- E	7½	8	10	715	⅜	975	195	25 x 44	1350	50	1550
Ceta	1802- E	15	8	14	760	½	2400	165	31 x 51	1850	75	2150
Chabo	1902- E	15	8	14	760	½	2000	200	31 x 51	1850	75	2150
Chafin	2002- E	15	8	14	760	½	1650	240	31 x 51	1850	75	2150
Chala	1803- E	20	10	20	1600	½	3100	170	38 x 56	2300	105	2700
Chalco	1903- E	20	10	20	1600	½	2600	200	38 x 56	2300	105	2700
Chalda	2003- E	20	10	20	1600	½	2100	250	38 x 56	2300	105	2700
Chaldro	2103- E	20	10	20	1600	½	1750	300	38 x 56	2300	105	2700
Chambra	2203- E	25	10	20	1600	½	3900	170	38 x 56	2600	105	3100
Chamel	2303- E	25	10	20	1600	½	3300	200	38 x 56	2600	105	3100
Chamo	2403- E	25	10	20	1600	½	2750	250	38 x 56	2600	105	3100
Chandel	2503- E	25	10	20	1600	½	2200	300	38 x 56	2600	105	3100
Culp	1804¼-E	35	12	23	1400	⅝	5000	170	43 x 59	3100	140	3700
Cum	1904¼-E	35	12	23	1400	⅝	4200	200	43 x 59	3100	140	3700
Cumu	2004¼-E	35	12	23	1400	⅝	3400	250	43 x 59	3100	140	3700
Cune	2104¼-E	35	12	23	1400	⅝	2800	300	43 x 59	3100	140	3700

* * *

DOUBLE DRUM HOIST SPECIFICATIONS

Code Word	Hoist No.	Motor Horse Power	Hoisting Drums				Line Speed and Single Line Pull Based on Two Inches of Rope on Barrel		Size of Bed Plate Width by Length Inches	Approximate Shipping Weight Complete Lbs.	Approximate Cubic Feet Crated For Export	Approximate Shipping Weight Crated For Export Lbs.
			Diameter Inches	Length Barrel Inches	Rope Capacity Feet	Recommended Size of Rope Inches	Maximum Single Line Pull Lbs.	Average Line Speed Ft. Per Min.				
Chanso	1810- E	3	8	8	315	⅜	500	155	22 x 58	1200	50	1400
Chantic	1910- E	3	8	8	315	⅜	425	185	22 x 58	1200	50	1400
Chapo	1811- E	7½	8	10	715	⅜	1200	160	25 x 65	1750	60	2050
Charad	1911- E	7½	8	10	715	⅜	975	195	25 x 65	1750	60	2050
Charbo	1812- E	15	8	14	760	½	2400	165	31 x 76	2550	110	2900
Charco	1912- E	15	8	14	760	½	2000	200	31 x 76	2550	110	2900
Charil	2012- E	15	8	14	760	½	1650	240	31 x 76	2550	110	2900
Chario	1813- E	20	10	20	1600	½	3100	170	38 x 86	3200	155	3800
Charis	1913- E	20	10	20	1600	½	2600	200	38 x 86	3200	155	3800
Charit	2013- E	20	10	20	1600	½	2100	250	38 x 86	3200	155	3800
Charlat	2113- E	20	10	20	1600	½	1750	300	38 x 86	3200	155	3800
Charlo	2213- E	25	10	20	1600	½	3900	170	38 x 86	3500	155	4200
Charo	2313- E	25	10	20	1600	½	3300	200	38 x 86	3500	155	4200
Chartag	2413- E	25	10	20	1600	½	2750	250	38 x 86	3500	155	4200
Chasin	2513- E	25	10	20	1600	½	2200	300	38 x 86	3500	155	4200
Cupe	1814¼-E	35	12	23	1400	⅝	5000	170	43 x 90	4100	205	4900
Cupo	1914¼-E	35	12	23	1400	⅝	4200	200	43 x 90	4100	205	4900
Cura	2014¼-E	35	12	23	1400	⅝	3400	250	43 x 90	4100	205	4900
Custo	2114¼-E	35	12	23	1400	⅝	2800	300	43 x 90	4100	205	4900

O&S
REVERSIBLE CONTRACTORS' HOISTING ENGINES



Single and Double
Friction Drum Reversible Contractor's Hoist
Equipped with Multiple Cylinder Gasoline Engine or Motor

THIS reproduction illustrates our reversible contractor's hoist, which is adapted for single or double platform elevators, spouting work, back fillers, light derricks and general contracting work. You will note that the single drum hoist is suitable for attaching the second drum, making it a double drum hoist equipped with one sheave wheel and one winch head.

The clutches are of the band type. The sheave and winch head may be reversed and either may be operated independently. The drum is bronze bushed and equipped with powerful "V" type friction. When disengaged, it is loose on the shaft.

The winch head is keyed to the forward drum shaft only, and is not a part of the single drum equipment. To operate the sheave, it is necessary to engage it with the jaw clutch provided for this purpose.

O&S

REVERSIBLE CONTRACTORS' HOISTING ENGINES

(CONTINUED)

THE operation of the sheave wheel is controlled by means of the vertical lever. With the lever standing vertical, as shown in the cut, all sheave hoisting parts are at a standstill. When the operating lever is thrown toward the sheave side of the hoist, the load is raised. Throw the lever to the operating side to obtain the reverse.

GASOLINE HOIST SPECIFICATIONS

Code words CRIM and CRING represent Single Drum Hoists.
Code words CRINI and CRINK represent Double Drum Hoists.

Code Word	Hoist No.	Motor Horse Power	Hoisting Drums				Line Speed and Single Line Pull Based on Two Inches of Rope on Barrel				Size of Bed Plate Width by Length Inches	Approximate Shipping Weight Complete Lbs.	Approximate Cubic Feet Crated For Export	Approximate Shipping Weight Crated For Export Lbs.
			Diameter Inches	Length Barrel Inches	Rope Capacity Feet	Recommended Size of Rope Inches	Maximum Single Line Pull Lbs.		Average Line Speed Ft. Per Min.					
							Drum	Sheave	Drum	Sheave				
Crim	1852¼-G	15	8	14	760	½	1800	1200	200	300	32 x 58	2550	90	3050
Cring	1852½-G	20	8	20	1000	½	2200	1450	200	300	39 x 58	2650	105	3150
Crini	1952¼-G	15	8	14	760	½	1800	1200	200	300	32 x 86	3250	125	3950
Crink	1952½-G	20	8	20	1000	½	2200	1450	200	300	39 x 86	3400	145	4100

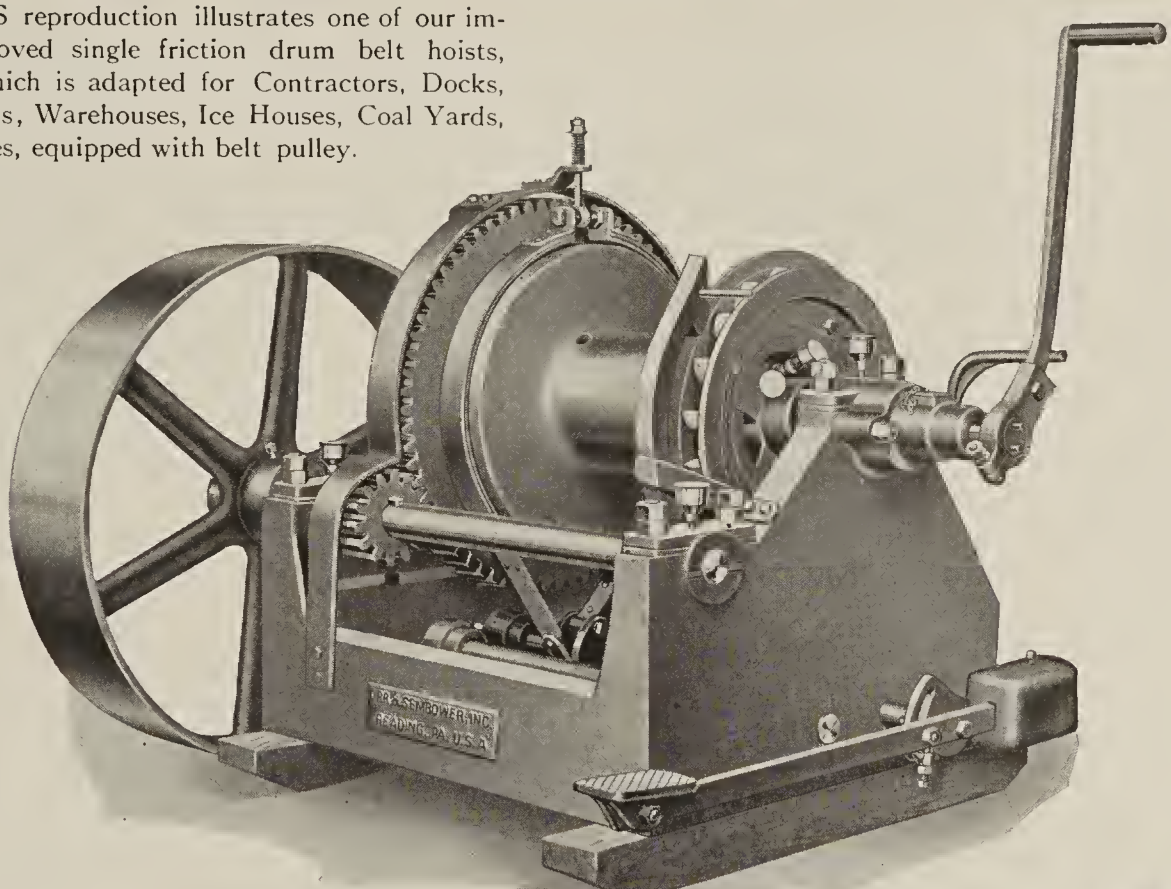
ELECTRIC HOIST SPECIFICATIONS

Code words CRINO and CRIP represent Single Drum Hoists.
Code words CROA and CROF represent Double Drum Hoists.

Code Word	Hoist No.	Motor Horse Power	Hoisting Drums				Line Speed and Single Line Pull Based on Two Inches of Rope on Barrel				Size of Bed Plate Width by Length Inches	Approximate Shipping Weight Complete Lbs.	Approximate Cubic Feet Crated For Export	Approximate Shipping Weight Crated For Export Lbs.
			Diameter Inches	Length Barrel Inches	Rope Capacity Feet	Recommended Size of Rope Inches	Maximum Single Line Pull Lbs.		Average Line Speed Ft. Per Min.					
							Drum	Sheave	Drum	Sheave				
Crino	1852¼-E	10	8	14	760	½	1350	900	200	300	32 x 58	2550	85	3050
Crip	1852½·E	15	8	20	1000	½	2000	1350	200	300	39 x 58	2650	100	3150
Croa	1952¼-E	10	8	14	760	½	1350	900	200	300	32 x 86	3275	120	3900
Crof	1952½-E	15	8	20	1000	½	2000	1350	200	300	39 x 86	3475	140	4100

O&S
BELT HOISTS

THIS reproduction illustrates one of our improved single friction drum belt hoists, which is adapted for Contractors, Docks, Factories, Warehouses, Ice Houses, Coal Yards, or Quarries, equipped with belt pulley.



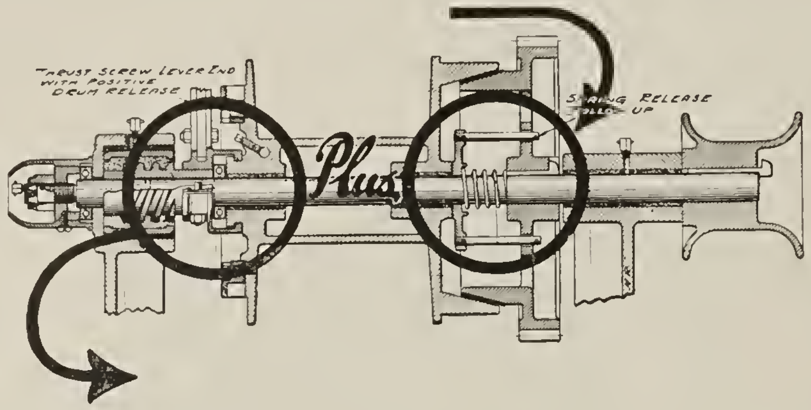
SINGLE DRUM HOIST SPECIFICATIONS

Code Word	Hoist No.	Recommended Horse Power	Hoisting Drums				Line Speed and Single Line Pull Based on Two Inches of Rope on Barrel		Hoist Pulley Diameter by Face Inches	Recommended R. P. M. of Hoist Pulley	Size of Bed Plate Width by Length Inches	Approximate Shipping Weight Complete Lbs.	Approximate Cubic Feet Crated For Export	Approximate Shipping Weight Crated For Export Lbs.
			Diameter Inches	Length Barrel Inches	Rope Capacity Feet	Recommended Size of Rope Inches	Maximum Single Line Pull Lbs.	Average Line Speed Ft. Per Min.						
Keev	1800-B	5	8	8	315	3/8	600	155	20 x 5	63	22 x 21	450	20	550
Kef	1801-B	10	8	10	715	3/8	1400	160	24 x 6	55	25 x 27	650	29	775
Keit	1802-B	20	8	14	760	1/2	2700	165	30 x 7	53	31 x 28	950	40	1125
Kelpi	1803-B	30	10	20	1600	1/2	4000	165	36 x 8	45	38 x 29	1500	50	1800
Kelso	1804-B	40	12	23	1400	5/8	5000	170	42 x 9	41	43 x 29	2300	60	2700

DOUBLE DRUM HOIST SPECIFICATIONS

Code Word	Hoist No.	Recommended Horse Power	Hoisting Drums				Line Speed and Single Line Pull Based on Two Inches of Rope on Barrel		Hoist Pulley Diameter by Face Inches	Recommended R. P. M. of Hoist Pulley	Size of Bed Plate Width by Length Inches	Approximate Shipping Weight Complete Lbs.	Approximate Cubic Feet Crated For Export	Approximate Shipping Weight Crated For Export Lbs.
			Diameter Inches	Length Barrel Inches	Rope Capacity Feet	Recommended Size of Rope Inches	Maximum Single Line Pull Lbs.	Average Line Speed Ft. Per Min.						
Kelt	1810-B	5	8	8	315	3/8	600	155	20 x 5	63	22 x 40	750	35	925
Keni	1811-B	10	8	10	715	3/8	1400	160	24 x 6	55	25 x 49	1050	45	1300
Keno	1812-B	20	8	14	760	1/2	2700	165	30 x 7	53	31 x 52	1800	60	2050
Kera	1813-B	30	10	20	1600	1/2	4000	165	36 x 8	45	38 x 59	2500	85	3000
Keto	1814-B	40	12	23	1400	5/8	5000	170	42 x 9	41	43 x 60	3500	100	4150

CMC SUPERIOR CONSTRUCTION



Positive Control—Note in the above illustration how the thrust screw lever end is cast as one piece with the positive release flange, which in turn fits into the groove cut around the end of the hoist drum itself. Thus, when the thrust screw lever is moved, the hoist drum must necessarily move with it. This is the CMC fully patented drum release feature.

Drums—Cast, close grained semi-steel, bronze bushed. Free running on shaft. Accurate balancing and large bearing surface assure ease of operation and full use of power.

Machine Cut Gears—All Medium and Heavy Duty CMC hoists are equipped with machine cut gears. They are of semi-steel on the Medium and steel on the Heavy Duty units.

Ball Thrust Bearings—Over 17 times the effective thrust area of the commonly used thrust pin. No troublesome pins, discs or oil baths.

Effective Brakes—External contracting band type—large braking surface. Non-burning, weatherproof asbestos lining.

I-Beam Steel Skids—Entire hoisting unit including power desired is mounted on I-beam steel skids rigidly braced.

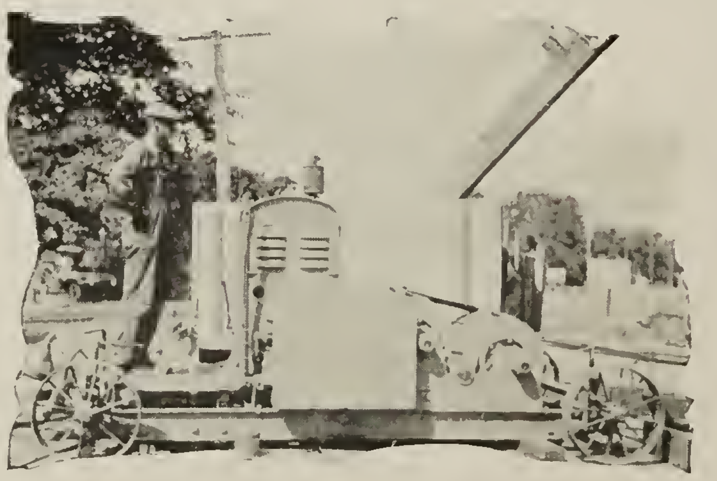
Cone Type Friction Clutches—Special heavy duty type. Lined with non-burning asbestos clutch lining. Non-slipping.

Power—Gasoline engine, electric motor or belt drive.

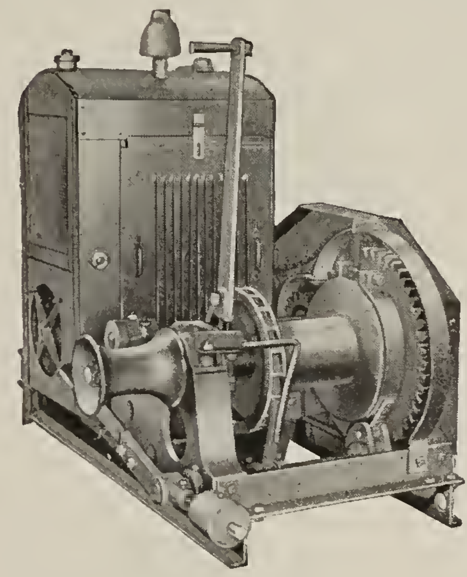
Trucks for Easy Portability of Heavy Duty Units

A jack screw elevator is located at each of the four corners of the hoist skid frame. After spotting the hoist, it is easy to quickly lower the entire unit until the skids rest on a solid foundation while in operation. A few turns at each corner raise the hoist on to the trucks. Exclusive automotive type steering is another worth-while feature.

The advantages to be obtained with a truck mounting are self-evident. Especially useful for swinging steel and for pile driving work.



THE LIGHT DUTY SERIES—CAPACITIES TO 1600 LBS.



Single Drum Non-Reversible

Light, low priced and readily convertible fittingly describes the light duty CMC unit illustrated at the left. This hoist embodies many exclusive features heretofore unknown to the light duty field.

The thrust lever operates through an external heavy bronze thrust screw which is patented and is the same construction used on the medium and heavy duty hoists which are described on the following pages.

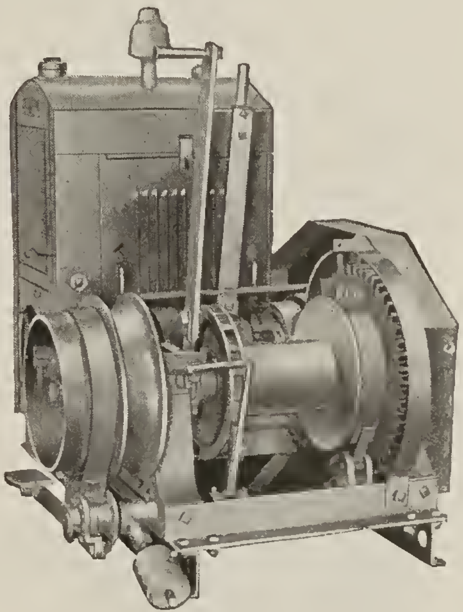
The drum is free running and is bronze bushed. Ball thrust bearings absorb shocks and eliminate friction.

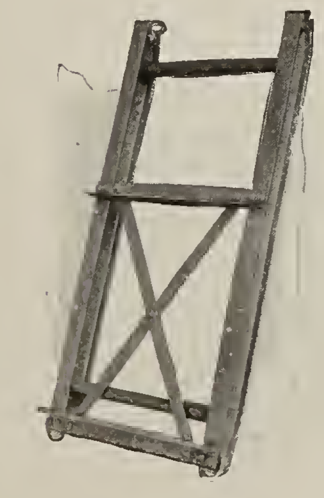
This unit can be furnished with either 5, 8 or 12 H.P. LeRoi power plant, electric motor or with belt drive.

Single Drum Reversible

A low priced, high quality builders' hoist large enough for use on small construction jobs and always useful as an auxiliary unit on the larger work, is found in the single drum light duty reversible hoist illustrated at the right. Naturally, double cage elevator operation is its specialty, but light pile driving jobs, single cage elevators, as well as general construction jobs can also be readily handled. Plaster contractors use this hoist for hoisting plaster to the upper floors of buildings and thus save a great deal of time and money over the old methods.

Bulletin 2815 is yours on request without obligation in which you will find illustrations and descriptions of the two hoists shown on this page as well as the other CMC units discussed on the following pages.



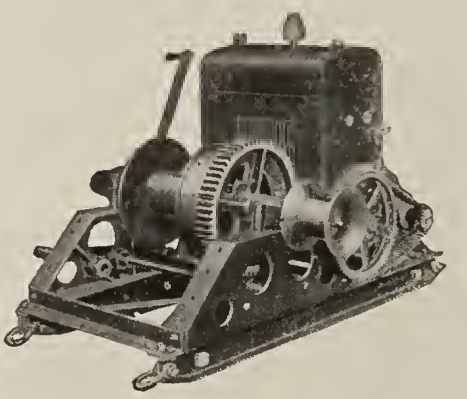


CMC Arc-Welded Hoist Frame

Note how the tubular steel spacers are welded to the web of the I-beam steel skids. See how rigidly the entire frame is braced against even abnormal stress. This is a new CMC development—a worth while feature.

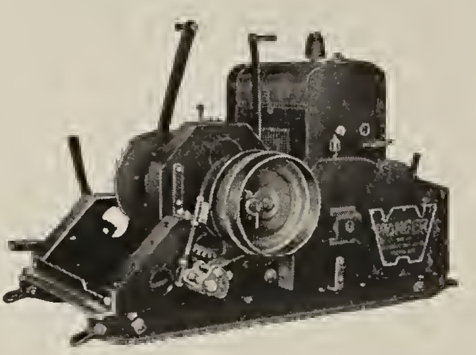
On all CMC hoists skids are heavy section steel I-beams. These skids are further strengthened by heavy skew and cross braces. Within the tubular steel spacers (welded to the web of the I-beam skids) are steel tie rods to keep the skids from spreading.

THE MEDIUM DUTY SERIES—CAPACITIES TO 4000 LBS.



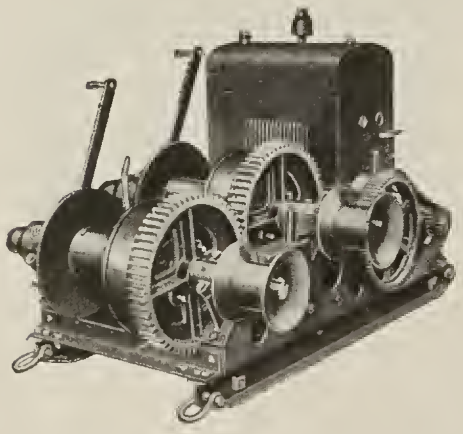
Single Drum Non-Reversible

A moderately priced non-reversible outfit, just suited to pile driving jobs, single cage elevator operation, and numerous other functions. Can be furnished with 15, 20 or 25 H.P. multi-cylinder gasoline engine. A countershaft with cut gears for electric motor drive can be furnished if desired. A belt drive arrangement is also available. It is commonly furnished on arc-welded steel frame as illustrated with a seven or eleven inch drum optional.



Single Drum Reversible
The Ideal Builder's Hoist

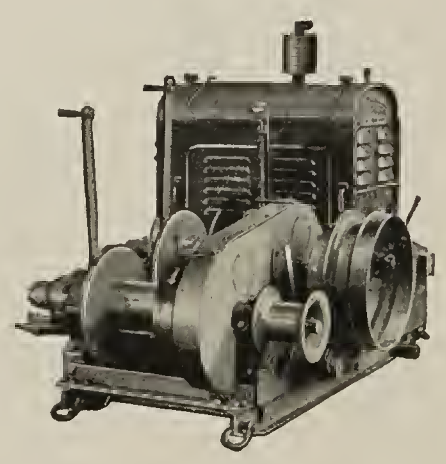
An exceptional contractors' hoist—the medium duty single drum reversible CMC. Especially adapted for both single and double cage elevator work, for operating material skips or for concrete tower layouts. A free running, bronze bushed drum —machine cut gears—positive drum release, and many other features are built into this hoist. A seven or eleven inch drum is optional. Steel trucks available at small extra cost.



Two Drum Non-Reversible

For pile driving at minimum cost we heartily recommend the two drum medium duty non-reversible unit, for jobs within its capacity. Furnished with 15, 20 or 25 H.P. multi-cylinder gasoline engine or electric motor. Seven or eleven inch drums optional.

Gears of this and other medium duty CMC units are machine cut semi-steel, and the simple positive control that characterizes all CMC hoists is, of course, incorporated on this one.

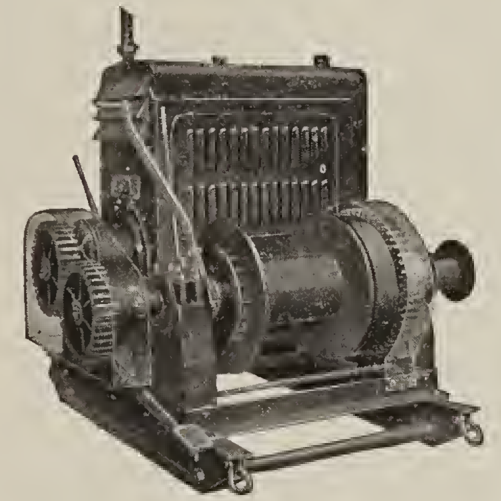


Improved-Up-to-the-Minute Two Drum Reversible

A hoist with which it is possible to operate three leads from two drums in a practical way is the two drum medium duty CMC. With this hoist you can operate a double cage elevator with reversible elevator sheave, lift a concrete bucket with one drum and a material skip with the other. Bulletin 2815 explains fully how this is done in addition to giving complete specifications of all CMC hoists listed in this catalogue.

CMC CONSTRUCTION MACHINERY CO. HOISTS

THE HEAVY DUTY SERIES—CAPACITIES TO 9500 LBS.



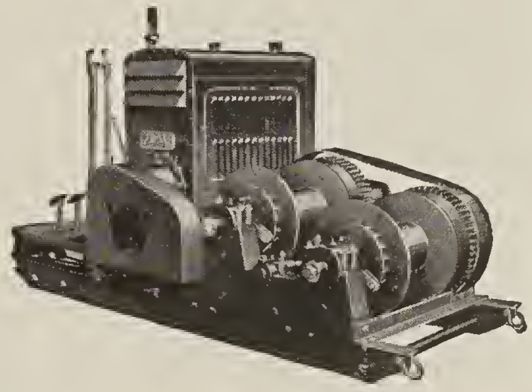
Single Drum Non-Reversible

CMC heavy duty hoists are designed for severe, continuous usage. They are built to stand the "gaff." In the single drum unit we have a hoist for heavy elevator operation, concrete bucket elevator, tower installations, or for pulling cars up inclines. It is furnished with either a 35, 45, 55, or 60 H.P. multi-cylinder gasoline engine or electric power, if desired.

The boom swinger attachment illustrated in conjunction with the three drum hoist at the bottom of this page may also be added to the heavy duty single drum hoist if wanted for jobs requiring this attachment.

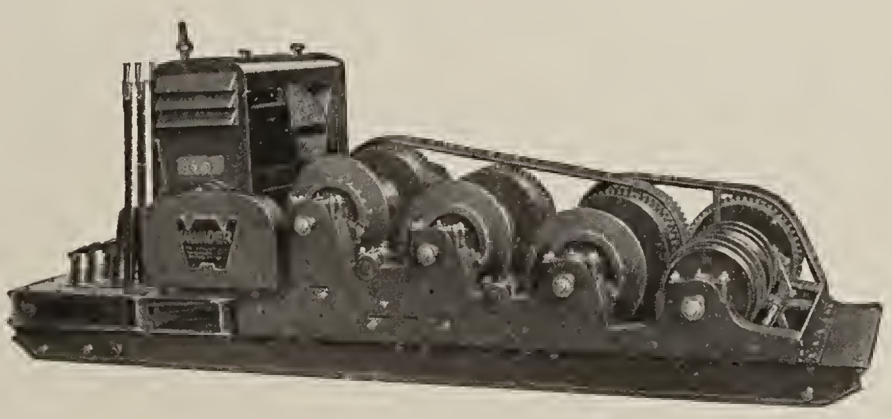
Two Drum Non-Reversible

On jobs requiring a sturdy, powerful two drum hoist the heavy duty non-reversible double drum CMC unit excels. Either side or banked controls are optional, and a boom swinger can be furnished if wanted. This hoist finds its chief uses in pile driving work, swinging structural steel, handling clam shell or orange peel buckets, etc. Steel trucks can be had at small extra cost.



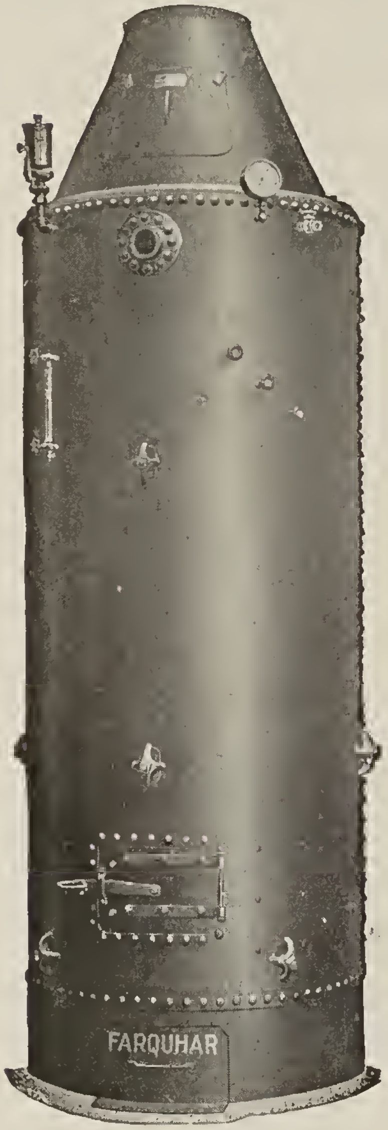
Bronzed bushed drums—positive control with drum release—steel cut gears and high pressure lubrication on all heavy duty hoists.

Three Drums and a Boom Swinger—CMC Three Drum Non-Reversible Unit



An outfit that is demanded by many clam shell and orange peel bucket installations. Naturally, this outfit will handle anything that a single or double drum unit will, in addition to the functions made possible by the use of the third drum and boom swinger. Eighteen inch drums if desired, to give a higher speed. For complete specifications and details write today for bulletin 2815.

FARQUHAR VERTICAL TUBULAR BOILERS



Style O

Style O Vertical Tubular Boiler, as illustrated herewith, is equipped with full length tubes. It is made of flange and fire-box steel, A. S. M. E., for a safe working steam pressure of 125 lbs., but boilers of 150 and 175 pounds respectively can be furnished on order. Sizes from 10 H. P. to 60 H. P. as per table of specifications. Smaller and larger boilers than those listed can be supplied.

The Vertical style boiler is very popular for stationary purposes where the space is a consideration. They are efficient, economical in fuel and very durable. 10 H. P. boilers are furnished with cast iron hoods. The larger sizes have steel hoods. Sufficient handholes are provided for cleaning.

Vertical Boilers are thoroughly stayed. Rivet holes are punched small and reamed to size. Workmanship throughout is first class and all boilers are thoroughly tested both by hydrostatic and steam pressure before being shipped.

In addition to the standard Style O, we make special Vertical Boilers to order.

REGULAR EQUIPMENT

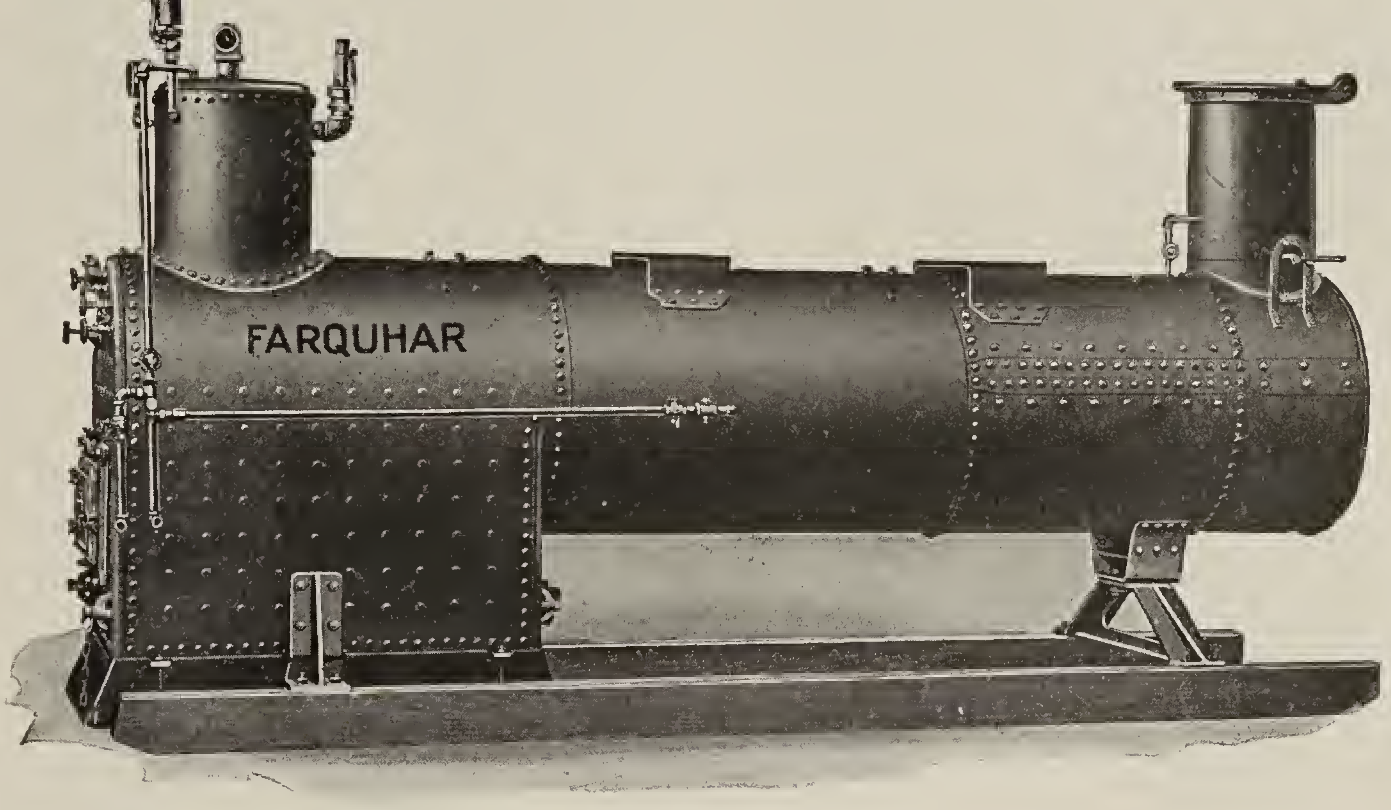
- Base and Draft Door
- Grates
- Hood
- Safety Valve
- Steam Gauge with Syphon
- Water Gauges
- Gauge Cocks
- Whistle and Pipe
- Blow-off Valve
- Funnel
- Flue Cleaner
- Poker

EXTRAS TO ORDER

- One Injector on Boilers less than 50 H. P.
- Two Injectors on Boilers 50 H. P. and Larger
- Spark Arrester
- Smoke Stack

Number	Rated Horse Power	Diameter	Height	FIRE BOX		TUBES			STACK		Approximate Domestic Weight—Lbs.
				Diameter	Height	Number	Diameter	Length	Diameter	Length	
0-10	10	31″	6′	25¾″	28″	56	2″	44″	10″	8′	2300
0-15	15	34″	7′	28″	28″	68	2″	56″	12″	15′	2975
0-20	20	40″	8′	34″	30″	78	2″	66″	14″	16′	4150
0-30	30	44″	9′	39¼″	30″	98	2″	78″	18″	20′	5100
0-40	40	48″	9½′	41½″	30″	124	2″	84″	18″	24′	6350
0-60	60	54″	12′	47½″	33″	150	2″	111″	19″	24′	8900

FARQUHAR LOCOMOTIVE BOILERS



Style "F"

Farquhar Locomotive Boilers are of the open bottom, water front type. Built in strict conformity to the rigid requirements of the A. S. M. E. Code for 125 pounds safe working pressure, but we are prepared to build boilers with 150 pounds or even greater working pressure; also Massachusetts Standard.

Fire box in Farquhar Boilers is large and provides ample space for fuel and complete combustion of the fuel gases. The tubes are arranged to distribute the heat in such a manner that the greatest amount of steam is generated with the least consumption of fuel. Farquhar Rigs are economic and efficient; have long life and render dependable service. Mounted on wheels or sills. Equipped to burn coal, wood or oil.

REGULAR EQUIPMENT

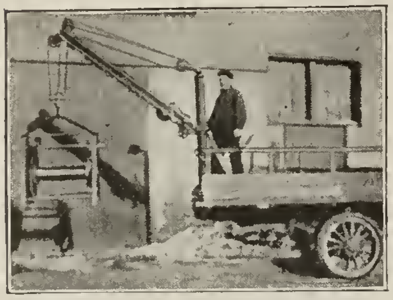
Grates
Stack Saddle
Stack Damper up to and including 40 H.P.
One Safety Valve up to and including 40 H.P.
Two Safety Valves 50 H.P. and larger
Gauge Cocks
Blow-off Valve
Whistle and Pipe
Water Gauges
Globe Valve with Blower
Steam Gauge with Syphon
Smoke Box Ring and Door
Fire Door
Funnel
Flue Cleaner with Handle
Poker
Ash Pan on Style "G"
Ash Pan on Style "F" up to and including 30 H.P.
Tongue and Breast Chains
Double and Single Trees
Hand Brake on Style "G" up to and including 60 H.P.

EXTRAS TO ORDER

Smoke Stack
Spark Arrester
Injector
Ash Pan on Style "F" larger than 30 H.P.
Jacketing
Oil Burning Attachment

Number on Wheels	Number on Sills	Rated Horse Power	Waist Diameter	Fire Box			Tubes			Dome		Stack		Ground Wheels		Approximate Weight on Wheels, Pounds	Approximate Weight on Sills, Pounds
				Height	Length	Width	Number	Diameter	Length	Diameter	Height	Diameter	Length—Ft.	Front	Rear		
G-10	F- 10	10	26	29	37	22	32	2	63	12	12	10	9	36x 6	44x 6	4900	3550
G-15	F- 15	15	30	30	41	25	36	2	80	16	18	12	10	36x 6	44x 6	5875	4300
G-20	F- 20	20	33	34	41	28	32	3	82	16	18	15	12	40x 7	51x 7	6885	5500
G-25	F- 25	25	36	36	49	31	32	3	90	20	22	18	16	40x 7	51x 7	8150	6750
G-30	F- 30	30	36	36	49	31	35	3	99	20	22	18	16	40x 7	51x 7	8500	7100
G-40	F- 40	40	39	40	52	34	40	3	124	20	22	19	20	40x 8	48x 8	10000	8550
G-50	F- 50	50	42	44	58	36	52	3	124	22	24	22	24	40x 8	48x 8	12700	11200
G-60	F- 60	60	48	50	58	42	64	3	120	24	26	26	30	42x 8	54x 9	13900	12220
G-80	F- 80	80	58	48	60	52	82	3	144	32	36	26	40	42x10	54x14	21500	18200
	F-100	100	62	50	60	56	90	3	168	32	40	30	50				20200
	F-125	125	64	52	60	58	102	3	192	36	40	30	50				27500

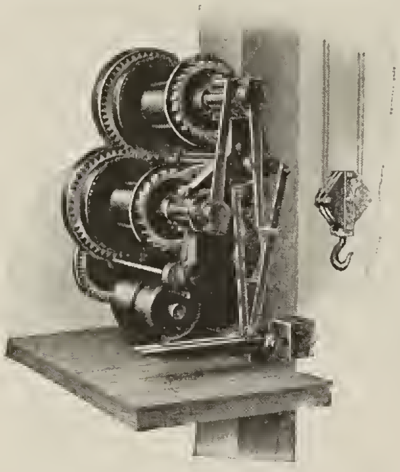
SASGEN IDEAL TRUCK DERRICK



Sasgen Ideal Truck Derrick can be used to great advantage for loading and unloading. The same can be placed on platform or on the back or front end of the truck, as shown in photos, or on platform hitched to gondola cars, unloading same. The boom swings a full circle, can be raised and lowered to suit work, and can be operated by one or two men, and in many cases one man can do the work of three or four men, loading and unloading trucks and cars.

Derrick has a capacity of 2,000 pounds, with boom 6 or 8 feet. With boom 10 feet derrick will have a capacity of 1,500 to 1,800 lbs. With boom 11 to 15 ft. equipped with extra braces to top of mast, derrick will have a capacity from 1,500 to 2,000 lbs. This derrick is equipped with winch for load and boom, block and cable to reach 25 ft. from derrick.

Price 6 ft. boom	......	Price 11 ft. boom	......
Price 7 ft. boom	......	Price 12 ft. boom	......
Price 8 ft. boom	......	Price 13 ft. boom	......
Price 9 ft. boom	......	Price 14 ft. boom	......
Price 10 ft. boom	......	Price 15 ft. boom	......



General Utility Derrick Hoists

Built of malleable iron and steel castings with a large factor of safety for the duty listed. Equipped with asbestos lined friction clutches and foot brakes, and are operated exactly in the same manner as a standard double friction drum hoist. All gears and pinions are pressed and keyed on shafts and have teeth machine cut from turned blanks. Bearings are bronze bushed.

DIRECT CURRENT—110, 220, 550 VOLTS

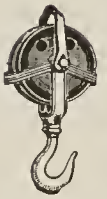
Horse Power Motor	Single Line Pull	Rope Speed Ft. Per Minute	Drum Controller	
			Dynamic Lowering	Plain Reversing
5	3000	40	....	....
7½	4500	40	....	....
10	6000	40	....	....

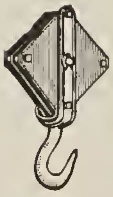
ALTERNATING CURRENT—60 CYCLE, 3 AND 2 PHASE 110, 220, 440, 550 VOLTS

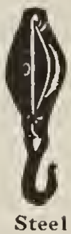
5	3000	40	....	....
7½	4500	40	....	....
10	6000	40	....	....

Single and Double Gin and Square Check Blocks for Wire Rope

Style	No.	Size of Sheave	Diameter of Cable	Price Single	Price Double	Sheaves Only
Gin Block...........	D-2	9½ x 1⅝	⅜ to ½	....	....	....
Gin Block...........	D-6	7 x 1¼	5/16 to ⅜	....	....	....
Square Cheek........	100	6 x 1⅛	¼ to 5/16	....	....	....


Gin Block


Square Cheek

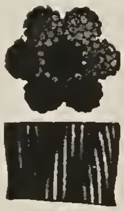

Steel Tackle

Steel Tackle Blocks for Manila Rope

Style	No.	Size of Sheave	Diameter of Rope	Price Single	Price Double	Sheaves Only
Steel Tackle..........	6	3¼ x 1	⅝ to ¾	....	....	....
	7	4¼ x 1	¾ to ⅞	....	....	....
	8	5 x 1⅛	⅞ to 1	....	....	....

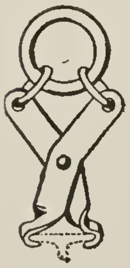
Manila Rope

Diameter Inches	Strength of Manila	Price Per Ft.
⅝	3,000	....
¾	3,800	....
⅞	5,600	....
1	6,800	....
1¼	11,200	....



Crucible Steel Cable

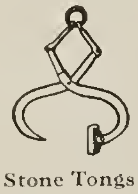
Diameter Inches	Proper Working Load Single Line Lbs.	Breaking Strain, Lbs.	Price Per Ft.
¼	900	4,400	....
5/16	1,200	6,200	....
⅜	1,900	9,600	....
7/16	2,600	13,000	....
½	3,300	16,800	....
9/16	4,000	20,000	....
⅝	5,000	25,000	....


Beam Clamps

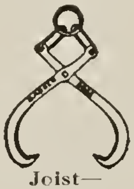
1-Ton
8-Inch

2-Ton
12-Inch

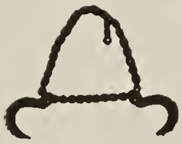
3-Ton
16-Inch


Stone Tongs

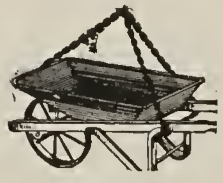
1,500 lbs.
2,500 lbs.
3,500 lbs.
4,000 lbs.


Joist—Timber Tongs

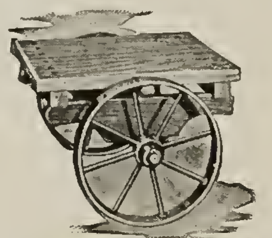
12-inch
14-inch
16-inch
18-inch
20-inch

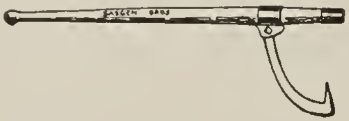

Stone Grab Hook and Chains

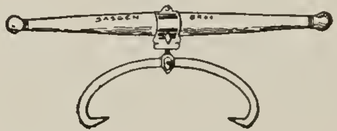
1,500 lbs.
2,500 lbs.
3,500 lbs.
4,000 lbs.


Chain Sling

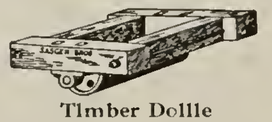
Builders Truck Platform
18 x 24″
Wheels 16″
Price ....



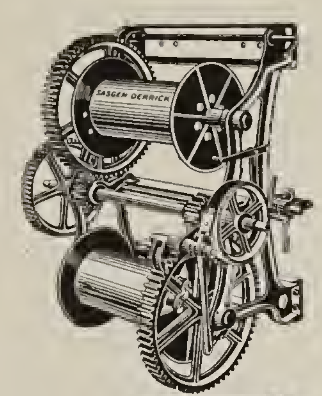

Cant Hook Price



Carrying Hooks, Price ......



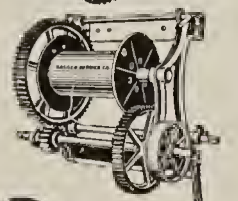
Timber Dollie
Price ....



Sasgen Double Drum Double Purchase Winch

Gears and Frame Made of Best Malleable

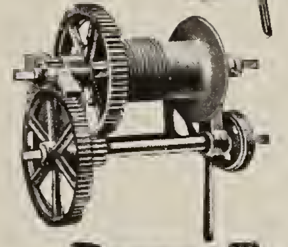
No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity—Lift 2 Men 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
150	9 x 14	22 x 15—4	10,000	20,000	....
151	9 x 16	22 x 15—4	10,000	20,000	....
152	9 x 18	22 x 15—4	10,000	20,000	....
153	9 x 20	22 x 15—4	10,000	20,000	....
154	9 x 22	22 x 15—4	10,000	20,000	



Sasgen Single Drum Double Purchase Winch

Gears and Frame Made of Best Malleable

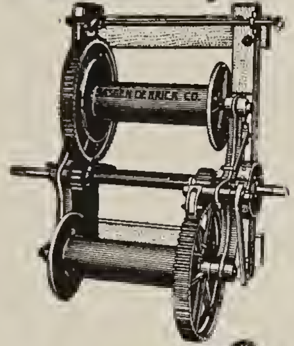
No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity—Lift 2 Men 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
160	9 x 14	22 x 15—4	10,000	20,000	.
161	9 x 16	22 x 15—4	10,000	20,000	. .
162	9 x 18	22 x 15—4	10,000	20,000	. . .
163	9 x 20	22 x 15—4	10,000	20,000	. .
164	9 x 22	22 x 15—4	10,000	20,000	



Sasgen Single Drum Double Purchase Winch

Gears Machine Cut from Malleable and Steel Blanks—Drum and Shaft are Bronzed Bushed

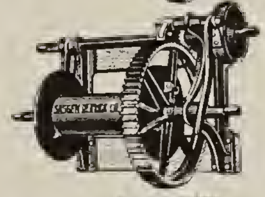
No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity—Lift 2 Men 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
170	6 x 8	13½ x 13½—2½	12,000	24,000	....
171	6 x 10	13½ x 13½—2½	12,000	24,000	....
172	6 x 12	13½ x 13½—2½	12,000	24,000	



Sasgen Double Drum Single Purchase Winch

Gears and Frame Made of Best Malleable

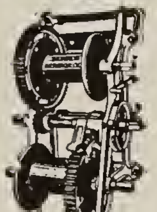
No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity—Lift 2 Men 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
140	5 x 14	18 x 4	3,000	6,000	....
141	5 x 16	18 x 4	3,000	6,000	....
142	5 x 18	18 x 4	3,000	6,000	....
143	7 x 14	18 x 4	3,000	6,000	....
144	7 x 16	18 x 4	3,000	6,000	....
145	7 x 18	18 x 4	3,000	6,000	....
146	7 x 20	18 x 4	3,000	6,000	....
147	7 x 22	18 x 4	3,000	6,000	



Sasgen Single Drum Single Purchase Winch

Gears and Frame Made of Best Malleable

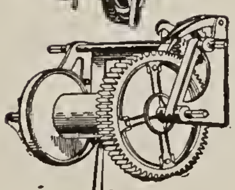
No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity—Lift 2 Men 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
129	5 x 12	18 x 4	3,000	6,000	....
130	5 x 14	18 x 4	3,000	6,000	....
131	5 x 16	18 x 4	3,000	6,000	....
132	5 x 18	18 x 4	3,000	6,000	....
133	7 x 14	18 x 4	3,000	6,000	....
134	7 x 16	18 x 4	3,000	6,000	....
135	7 x 18	18 x 4	3,000	6,000	....
136	7 x 20	18 x 4	3,000	6,000	....



Sasgen Small Double Drum Single Purchase Winch

Gears and Frame Made of Best Malleable

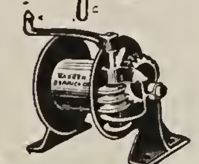
No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity—Lift 1 Man 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
112	4 x 8	12 x 3	2,000	4,000	...

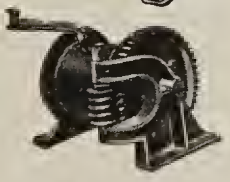


Sasgen Small Single Drum Single Purchase Winch

Gears and Frame Made of Best Malleable

No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity—Lift 1 Man 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
109	4 x 8	12 x 3	2,000	4,000	....
110	4 x 8	12 x 3	2,000	4,000	

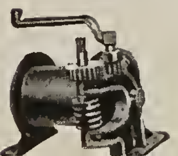




Sasgen Safety Worm Gear Winch

Malleable Cast Worm Wheel and Steel Cast Worm

No.	Diameter and Length of Drum Inches	Worm Gear	Capacity—Lift 1 Man 1 Line Lbs.	Capacity—Lift 1 Man 2 Lines Lbs.	Price Each
0	5½ x 6	16 to 1	350	700	....
1	5½ x 6	20 to 1	750	1,500	....
2	8 x 10	30 to 1	1,000	2,000	

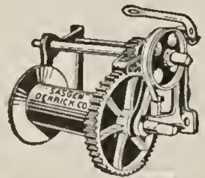


Sasgen Safety Worm Gear Double Purchase Winches

Worm Gears Machine Cut from Malleable Blanks

Worm Machine Cut from Steel Bar. Thrust Bearing on Worm Shaft

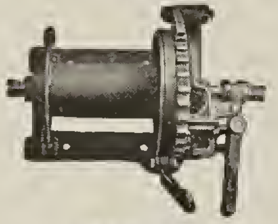
No.	Diameter and Length of Drum Inches	Worm Gear	Capacity—Lift 1 Man 1 Line Lbs.	Capacity—Lift 1 Man 2 Lines Lbs.	Price Each
8	8 x 10	40 to 1	2,000	4,000	....
9	8 x 10	48 to 1	3,000	6,000	.
10	8 x 10	48 to 1 87 to 1	4,000	8,000	....



Sasgen Junior Single Drum Single Purchase Winch

Gears and Frame Made of Best Malleable

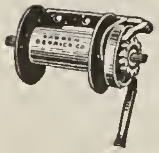
No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity 1 Man 2 Lines Lbs.	Capacity 2 Men 4 Lines Lbs.	Price Each
5	4½ x 10	10 x 3	1,500	3,000	....
6	4½ x 12	10 x 3	1,500	3,000	..



Sasgen Single Shaft Geared Winch

This Winch Can be Changed from Direct to Compound in One Second by Operating a Small Lever.

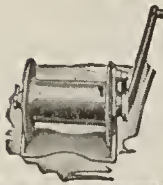
No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity—Lift 1 Man 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
115	4 x 8	10 x 3	1,500	3,000	....



Sasgen Small Winch, Not Geared

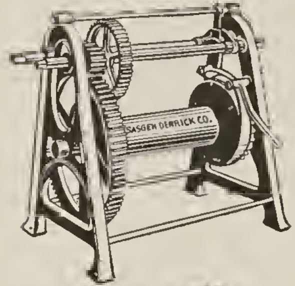
Made of Best Malleable

No.	Diameter and Length of Drum Inches	Not Geared	Capacity—Lift 2 Men 1 Line Lbs.	Capacity—Lift 2 Men 2 Lines Lbs.	Price Each
3	3½ x 7		750	1,500	....



Sasgen Small Puller

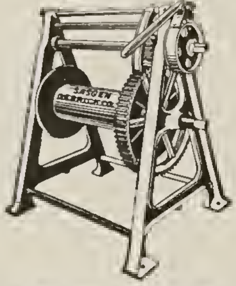
No.	Diameter and Length of Drum Inches	Not Geared	Capacity—Lift 1 Man 1 Line Lbs.	Capacity—Lift 1 Man 2 Lines Lbs.	Price Each
00	3 x 6	.....	300 to 400	600 to 800	....



Sasgen Double Purchase Hoisting Crab

Gears and Frame Made of Best Malleable

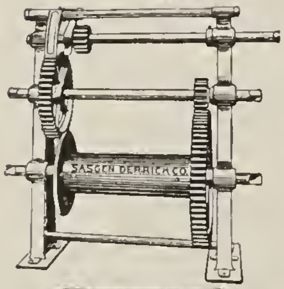
No.	Diameter and Length of Drum, Inches	Diameter of Gear and Pinion, Inches	Capacity—Lift 2 Men 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
220	6 x 16	24 x 12—4½	8,000	16,000	....
221	6 x 18	24 x 12—4½	8,000	16,000	....
222	6 x 20	24 x 12—4½	8,000	16,000	....
223	6 x 22	24 x 12—4½	8,000	16,000	....
224	7 x 18	24 x 12—4½	8,000	16,000	....
225	7 x 20	24 x 12—4½	8,000	16,000	....
226	7 x 22	24 x 12—4½	8,000	16,000	....
227	7 x 24	24 x 12—4½	8,000	16,000	....



Sasgen Single Purchase Hoisting Crab

Gears and Frame Made of Best Malleable

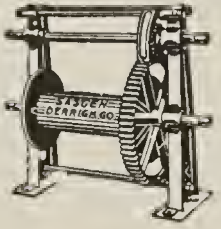
No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity—Lift 2 Men 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
120	5 x 16	18 x 4	3,000	6,000	....
121	5 x 18	18 x 4	3,000	6,000	....
122	5 x 20	18 x 4	3,000	6,000	....
123	5 x 22	18 x 4	3,000	6,000	....
124	7 x 16	18 x 4	3,000	6,000	....
125	7 x 18	18 x 4	3,000	6,000	....
126	7 x 20	18 x 4	3,000	6,000	....
127	7 x 22	18 x 4	3,000	6,000	....



Sasgen Double Purchase Truck Winch

Gears and Frame Made of Best Malleable

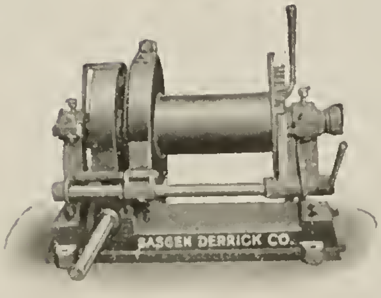
No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity—Lift 2 Men 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
230	7 x 16	18 x 12—4½	6,000	12,000	....
231	7 x 18	18 x 12—4½	6,000	12,000	....
232	7 x 20	18 x 12—4½	6,000	12,000	....
233	7 x 22	18 x 12—4½	6,000	12,000	....
234	7 x 26	18 x 12—4½	6,000	12,000	....
235	7 x 30	18 x 12—4½	6,000	12,000	....



Sasgen Single Purchase Truck Winch

Gears and Frame Made of Best Malleable

No.	Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Capacity—Lift 2 Men 2 Lines Lbs.	Capacity—Lift 2 Men 4 Lines Lbs.	Price Each
240	6 x 14	18 x 4	3,000	6,000	....
241	6 x 16	18 x 4	3,000	6,000	....
242	6 x 18	18 x 4	3,000	6,000	....
243	6 x 20	18 x 4	3,000	6,000	....
244	6 x 22	18 x 4	3,000	6,000	....
245	6 x 24	18 x 4	3,000	6,000	



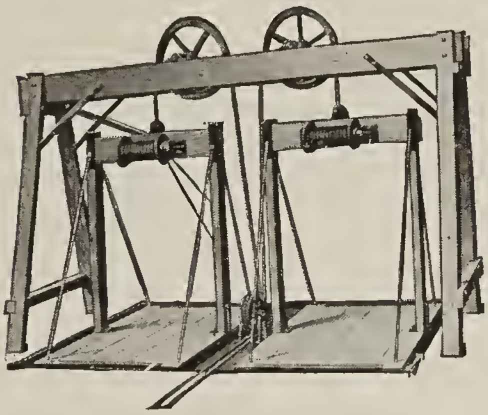
Sasgen Power Worm Driven Truck Winch

Non-reversible power worm driven winch to be operated from transmission takeoff by sprocket and chain drive. The drum is of the friction type and runs free on the shaft to revolve in either direction, when not engaged by the asbestos covered friction in worm wheel. For lowering load use brake also asbestos covered. A pawl which engages a ratchet on drum flange holds load in any position. Handy on wrecking truck and for various other purposes.

Price of winch without chain drive to transmission or niggerhead........................ ..

Price of niggerhead extra..

SASGEN MATERIAL ELEVATOR



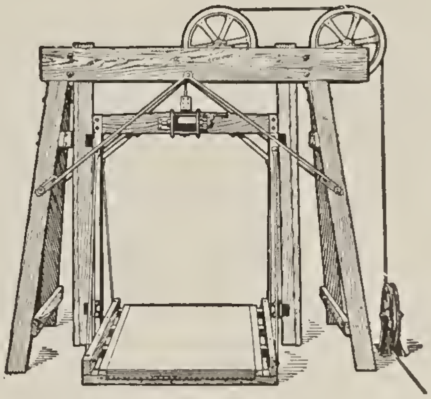
Double or Single Cage

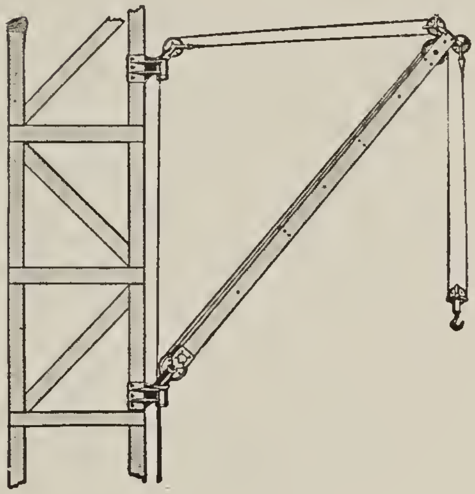
Cages are built of oak wood and well braced with iron rods. The truss beam is oak wood firmly bolted together, provided with suitable sheaves mounted on steel shafts, equipped with malleable iron boxes.

Double Cage 3′ x 5′ 6″...........
Double Cage 44″ x 6′............
Single Cage 4′ x 6′..............
Single Cage 6′x 6′...............
Single Cage 6′ x 7′...............

Price does not include guides.

Guides, per lineal foot............
Brake attached for horse power, extra.
3/8″ Dia. Cable for Hoist Line, per foot......................





SASGEN TOWER BOOM

1 TON CAPACITY

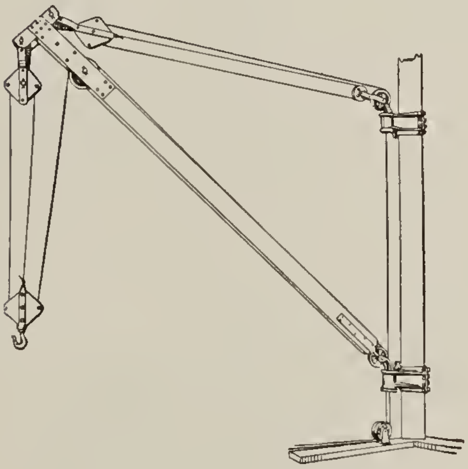
The Sasgen Tower Boom has all crucible steel fittings and is light and strong. The boom is made of two pieces, 3 x 6, with a spreader in the middle. This gives the boom extra strength both ways. Fittings are arranged so that the boom and load line can be handled on a double drum hoist. The boom line can be tied stationary. The boom swings a three-quarter swing and is very practical to connect to concrete towers, and hoisting various material into the building.

Boom 14 ft. with Top and Bottom Tower Fitting............................ ..
Boom 14 ft. without Top Tower Fitting..................................... .....

For longer lengths add $3.00 for 2 ft to 24 ft.................................. ..
Price for Fittings only, no bolts.. ..
Without Top Tower Fitting.. .

3 TON CAPACITY

All fittings are cast crucible steel. Top and bottom fittings can be furnished to bolt to corner of post 12 x 12 in size, or to flat side of column or post. When ordering fittings for flat side of post or column, state size of same. The boom and load lines run through openings in top and bottom trunnions. The boom is made of 8 x 8 timber and swings ¾ circle.



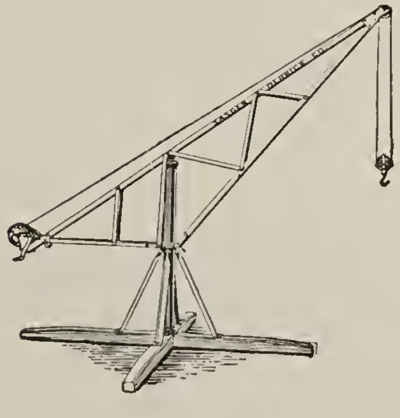
Boom 20 ft. long with top and bottom fittings complete except cable.......... .. ..
Boom 20 ft. long without top corner fitting and 1 boom block............... .. ..

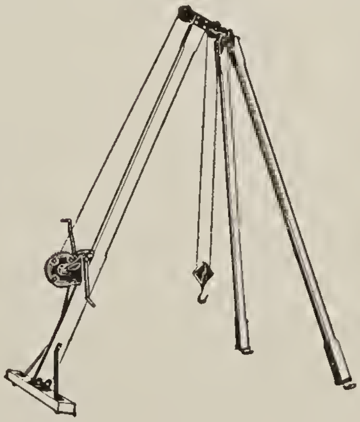
For longer lengths of boom, add $2.00 per ft.............................. ......
Fittings only, complete.. ....
Fittings only, without top fitting and 1 boom block......................... ..

SASGEN CIRCLE SWING COUNTERWEIGHT DERRICK

Is especially handy around foundries or yards where heavy castings, iron or pipe, beams and bars, timbers, stone, etc., are loaded or unloaded and for handling boats on docks or platforms in and out of water. Also for building and excavating. The machine can be used portable or stationary. It has a height of 14 ft., a circle swing of 18 ft., weight about 600 pounds, and a capacity of 1,500 pounds, with cable and block ready for use.

Price.. ......


SASGEN DERRICK CO.



SASGEN TRIPOD DERRICK

Is light, strong and easily moved around, practical for laying sewer pipe, setting monuments and placing burial vaults, digging trenches, pulling casings, and many other purposes. The Derrick is equipped with geared winch, block, 100 feet cable ready for use.

Capacity	Height	Price	Height	Price
2,000	12		14	
3,000	12		14	
4,000	12		14	

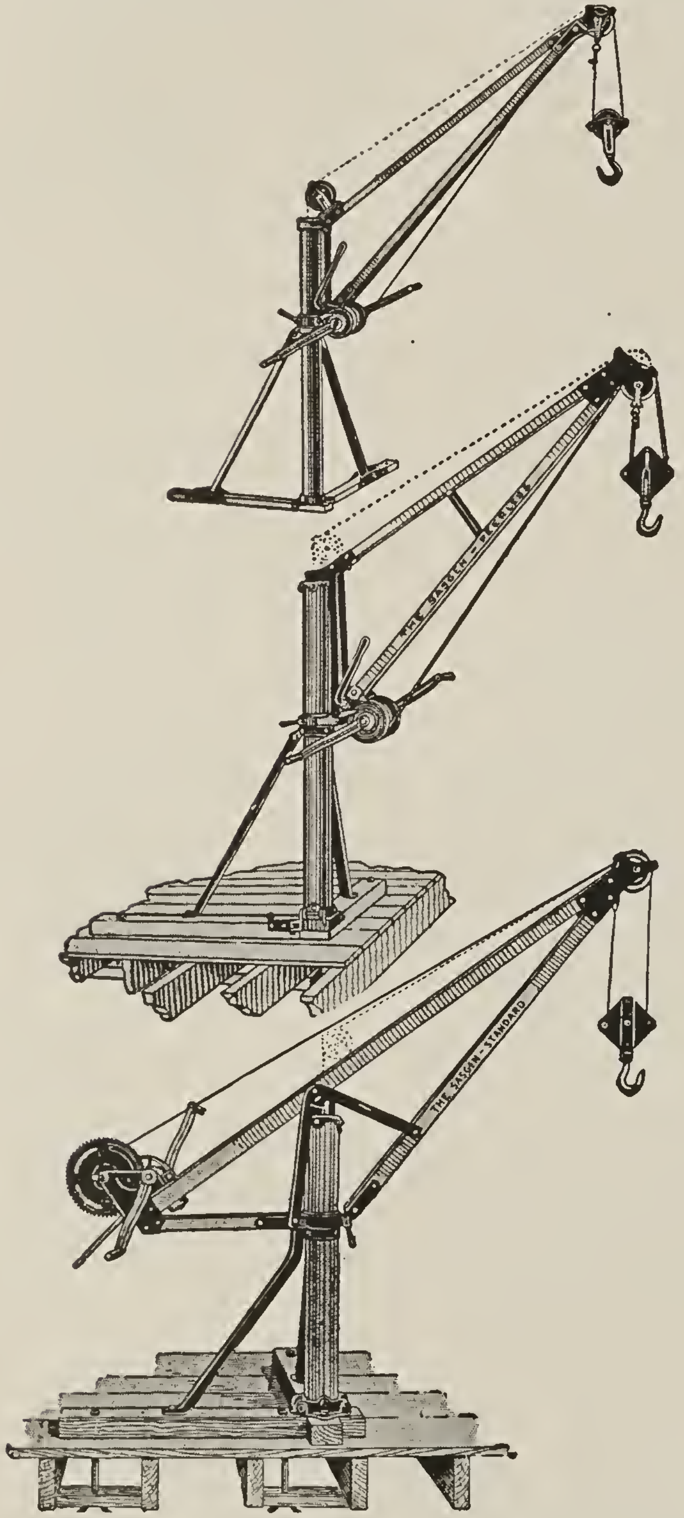
SASGEN CHAMPION

Swings full circle. Built of all steel. Fittings malleable.

Has self-lubricating bushings, load and boom brake. Boom can be removed in a few seconds. Bottom sills and mast fold together, making it in two parts, compact enough so that a contractor can haul it to jobs in his auto. Capacity 1,000 lbs., weighs only 225#. Can be operated by hand, horse or power. Height, 7½ feet; boom extends 5 ft. Equipped with 110 ft. crucible steel cable, block, cleats and bolts for fastening, complete ready for work. Is very practical for hoisting flooring, joists, wheelbarrows on two and three story buildings.

Price, hand power........................... ......
Price, hand and power...................... ......
Extra cable, per foot......................... ......

Drum holds 135 ft. cable



SASGEN PEERLESS

Swings full circle. Built of All Steel. Fittings Malleable.

Has self-lubricating bushings, load and boom brake, can be used hand, horse or power. Boom can be taken off in an instant. The bottom sills and mast fold together, making it easy to remove or put up. Many contractors haul them to jobs in their automobiles. For the above reasons the machine is almost indispensable to contractors who build from 2 to 4 story buildings; for hoisting joists, timber, iron, stone, terra cotta, reinforcing bars, wheelbarrows, etc. Capacity, 1,800 lbs., weight 325#, height 8 ft. swings 8 ft. Equipped with 125 ft. crucible steel cable, block, cleats and bolts for fastening, complete, ready for work.

Price, hand power........................... ......
Price, hand and power...................... ......
Extra cable, per foot......................... ......

Drum holds 175 ft. cable.

SASGEN STANDARD

Swings Full Circle. Built of All Steel. Fittings Malleable.

Is equipped with a geared winch. Can be used hand or power. Built strong and durable.

Has boom and load brake and is built so that the boom can be quickly detached. Mast folds to bottom sills, making it easy to take apart or set up. For hoisting loads 1,500 to 2,500 lbs. by hand or power our STANDARD CIRCLE SWING DERRICK has no equal and is the only full circle swing builder's derrick that capacity.

Capacity 2,500 lbs., weight 425#, height 8 ft., swing 8 ft. Equipped with geared winch, 150 ft. $\frac{5}{16}$ in. steel cable, block, cleats for fastening, complete, ready for use.

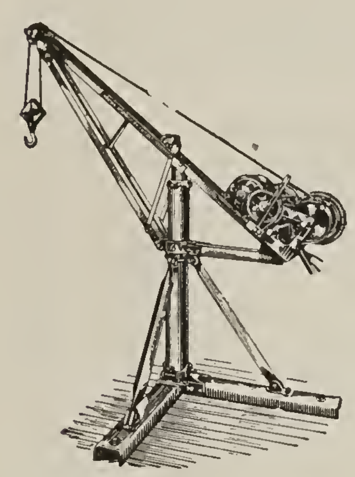
Price, hand power........................... ......
Price, hand and power...................... ......
Extra cable, per foot......................... ......

Drum holds 275 ft. cable.

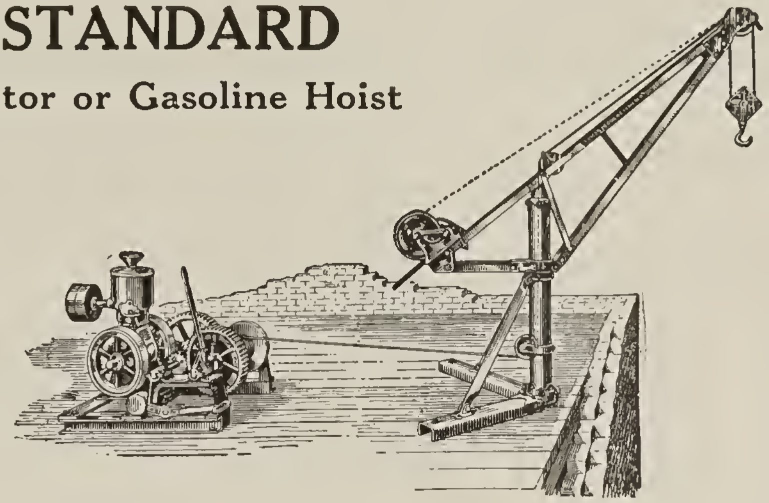
Our Motto: Satisfaction or No Sale. Derricks Shipped on Trial to Reliable Contractors. Give Us a Trial. Apply to Distributor for Prices.

SASGEN STANDARD

With Electric Motor or Gasoline Hoist



Electric Hoist



Gasoline Hoist

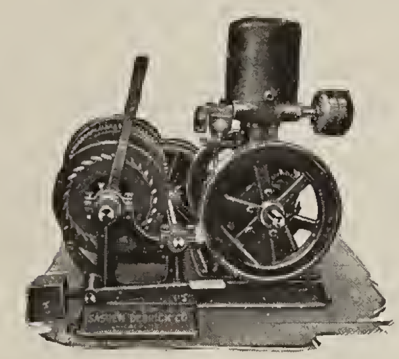
Derrick equipped with either Electric or Gasoline Hoist makes a very practical time and labor saving machine. All the material can be hoisted with this machine. The derrick swings a full circle, so that loads can easily be landed on building. It can be used either outside of the building or from opening inside, for hoisting timbers, joists, stone, flooring, iron, wheelbarrows, etc.

Derrick equipped with 1½ h. p. Electric Hoist is generally operated on single line for loads from 300 to 500 lbs. The Electric Hoist as shown above is very light and compact, mounted on derrick. Price of derrick with 1½ h. p. Electric Hoist having three phase, 60 cycle, 220 volts, alternating current motor also 175 ft. cable is...................... ......

When motor of other phase, cycle, voltage or current is desired write for price. Mention what current, voltage, phase or cycle when ordering. If derrick is desired for hand and power, add $20.00 for hand winch.

Above photo shows Gasoline Hoist connected directly in back of derrick and it can also be used on any floor below the derrick, by running the cable down through the mast and floor to a snatch block below and then to the hoist. This is the lightest and most practical Gasoline Hoist and Derrick combined on the market for hoisting loads of building material from 500 to 2,000 lbs.

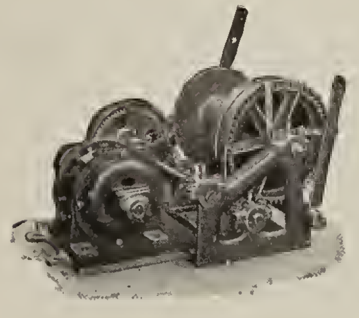
Price of Derrick with Gasoline Hoist and 175 ft. cable is.. .....



SASGEN GASOLINE HOIST

Is used by Contractors for light loads. A Novo 3 horse power vertical or 3 horse power Hercules horizontal engine is used as power plant. The winch is of the friction type. The drum runs free on the shaft, having bronze bearings. By operating a cam lever the drum engages a cone friction in the main gear. The brake band is operated by a foot lever for holding and lowering loads. A pawl is also provided which engages a ratchet on the drum flange, for holding loads at any point without using brake. The power of the engine is transmitted to the hoist by means of cut gears. The hoist can be adapted to many purposes where light loads are handled. The line speed is 100 ft. per minute; single line pull 700 lbs.; drum holds 800 ft. of ⅜" cable. Floor space required is 25 x 36".

Price ....



SASGEN 1½ HORSE POWER ELECTRIC HOIST

Can be bolted to floor in a horizontal or to a post in a vertical position. Is of the friction drum type. The drum runs free on the shaft, having bronze bearings. By operating a cam lever the drum engages a cone friction in the main gear. A brake is used for lowering or holding loads. A pawl is also provided which engages a ratchet on drum flange for holding loads in any position. Can be adapted for many purposes where light loads are handled.

Size of motor is 1½ horse power; line speed 85 ft. per minute; single line pull 500 lbs.; drum holds 450 ft. 5/16" cable; overall dimensions are 23 x 29"; bed plate is 17 x 26".

Price of Electric Hoist with 3 phase, 60 cycle, 220 volt, alternating current motor is

Alternating current, 25 or 30 cycle, 3 phase, 200 or 440 volt.............................. ......
Alternating current, 60 cycle, single phase, 110 or 220 volt.............................. .....
Alternating current, 25 cycle, single phase, 110—220 volt.............................. .....
Direct current, 110—220 volt.. ......

SASGEN 5 HORSE POWER ELECTRIC HOIST

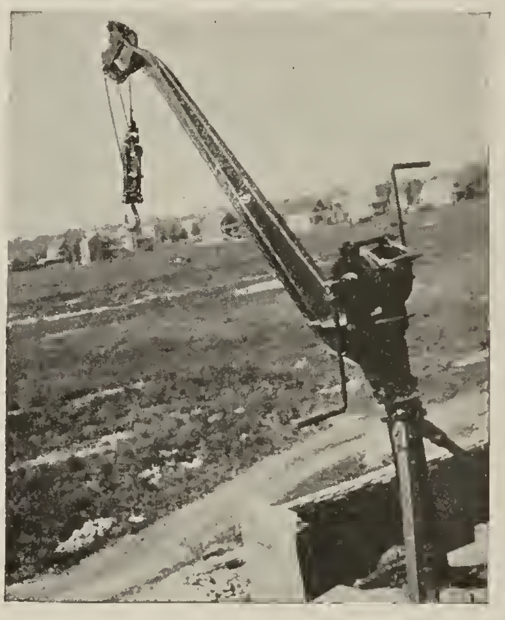
Non-reversible single drum electric hoist of the friction drum type. Drum runs free on the shaft having bronze bearings. By operating a cam lever the drum engages a cone friction in the main gear. The brake is operated by a foot lever for holding and lowering loads. A pawl is provided which engages a ratchet on the drum flange for holding loads at any point without using brake. Power is transmitted from 5 horse power motor by means of silent chain and sprockets to drive pinion shaft. Gears are machine cut from malleable iron blanks, which insures smooth running. Line speed of hoist is 100 ft. per minute; single line pull 1,000 lbs. Drum holds 800 ft. ⅜" cable. Floor space required 25" x 48".

Price for hoist with A. C. motor.. .....
Price for hoist with D. C. motor extra.................................. ....

Reduce Your Hoisting and Loading Costs 75% with the Kirstin

Model A—For Buildings, Trucks, Loading, Hoisting and General Use

1 Ton (1,000 Kilograms) Capacity



Model A derrick is built for general construction and building repair work, and for use on trucks for loading and unloading heavy materials and boxes. The photograph at the right shows this model in use on the new Lyon & Healy factory building.

Building, plumbing and roofing contractors, transfer companies, industrial plants, quarries and manufacturers of machinery, steel and other heavy products will find many uses in which the model A will replace three men.

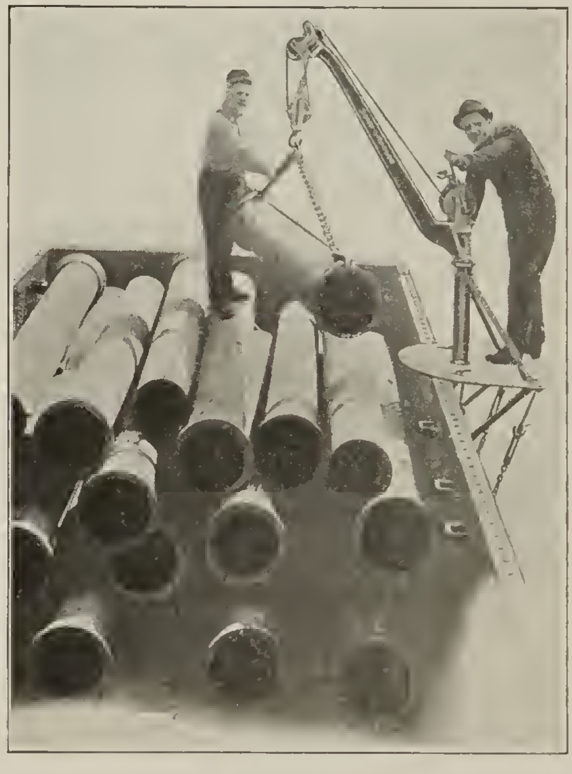
SPECIFICATIONS—Single, Double and Triple Power Derrick. Roller bearings on boom to reduce friction in swinging. Special design Block and Sheaves. Steel Channel bases, bolts and burrs for fastening. Full one ton capacity. 50 feet of cable. Drum capacity 300 ft. of cable. Hoisting speed 25 to 70 feet per minute. Weight 275 pounds, but built in sections each of which is easily carried by one man.

Price Complete F. O. B. Factory ________________ **$98.75**

Saving of four men in lifting heavy stone curb weighing 1500 to 2000 lbs., is reported by J. J. Ryan, Street Commissioner, Dubuque, Iowa

Model B—Derrick Complete with Railroad Car Platform

1 Ton (1,000 Kilograms) Capacity



Model B Derrick is of the same construction as model A except for the base. A patented base which can be attached quickly to the side of a gondola car, permits the use of model B in handling Cast Iron pipe, tile, poles, timbers, rails, and such material.

The platform base is of special steel re-inforced construction with corrugated, non-slip surface and large enough to permit two men to use it, where desired. The platform is held in place by adjustable supports, chains, hooks, and turnbuckles which are furnished with each Model B Derrick.

SPECIFICATIONS—Same as model A PLUS steel platform and all necessary attachments for holding platform in place. Weight complete 450 pounds, but built in sections which can be easily handled.

Price Complete F. O. B. Factory ______ **$149.50**

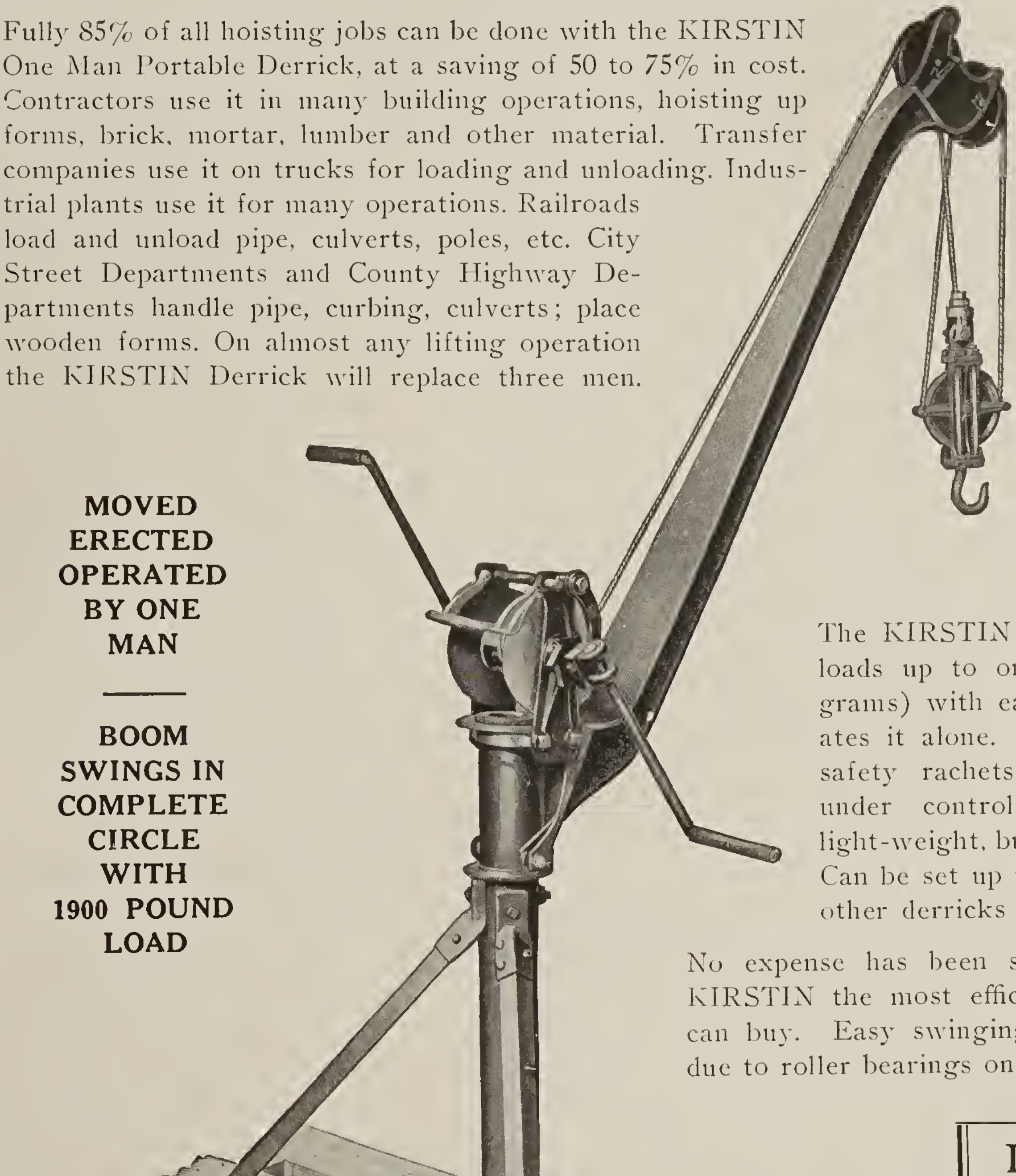
Luzerne County Road Department, Wilkes-Barre, Penn., now only use two men for unloading concrete and terra-cotta pipe which formerly required five men. Work is now easy for two men and the KIRSTIN, previously was hard labor for five men.

Prices Shown Are List. Write For Our Latest Discount Book, Applying To This Catalog.

Kirstin Portable Derrick

Hand Power All Steel

Fully 85% of all hoisting jobs can be done with the KIRSTIN One Man Portable Derrick, at a saving of 50 to 75% in cost. Contractors use it in many building operations, hoisting up forms, brick, mortar, lumber and other material. Transfer companies use it on trucks for loading and unloading. Industrial plants use it for many operations. Railroads load and unload pipe, culverts, poles, etc. City Street Departments and County Highway Departments handle pipe, curbing, culverts; place wooden forms. On almost any lifting operation the KIRSTIN Derrick will replace three men.



CAPACITY ONE TON

TRIPLE POWER CAN ALSO BE USED AS SINGLE AND DOUBLE POWER

MOVED ERECTED OPERATED BY ONE MAN

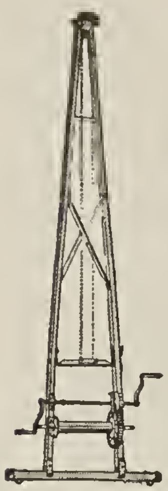
BOOM SWINGS IN COMPLETE CIRCLE WITH 1900 POUND LOAD

The KIRSTIN Derrick will handle loads up to one ton, (1,000 Kilograms) with ease. One man operates it alone. It is provided with safety rachets to keep the load under control. Small, compact, light-weight, but extremely durable. Can be set up in small space where other derricks could not be used.

No expense has been spared to make the KIRSTIN the most efficient Derrick money can buy. Easy swinging under full load is due to roller bearings on the boom.

PORTABLE

MANUFACTURED BY
A. J. KIRSTIN CO. ESCANABA, MICH.



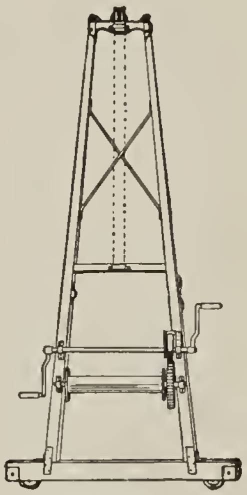
Top Point S. D.

SASGEN IMPROVED SETTER DERRICKS

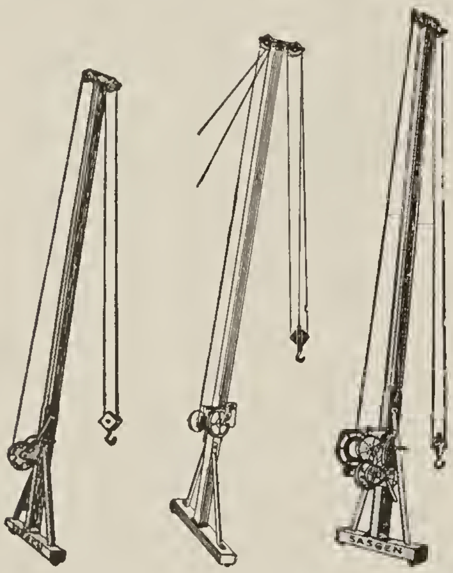
Top Point and Regular Style

Have many improvements over the old style Setter Derricks. The top frame is made of best malleable iron, equipped with two sheaves, does away with the block on top, increases the hoisting height about two feet, extends forward keeping load from scraping derrick, has lugs for guy lines in front and back and clamps for fastening extension pole if necessary. Shaft boxes are so constructed that drum and gear shaft can be taken off without removing boxes. The bottom and side pieces are connected with two malleable castings. This makes a very strong connection and enables to take derrick apart easily if necessary. Gears are malleable.

Top Point			Regular		
Capacity	Length	Price	Capacity	Length	Price
3,000	18	....	4,000	18	....
3,000	20	....	4,000	20	....
3,000	22	....	4,000	22	....



Regular S. D.



Fish Tackle to Swing Derrick Out and In Containing 5 Blocks and 50 Feet $\frac{5}{8}$-inch Rope.

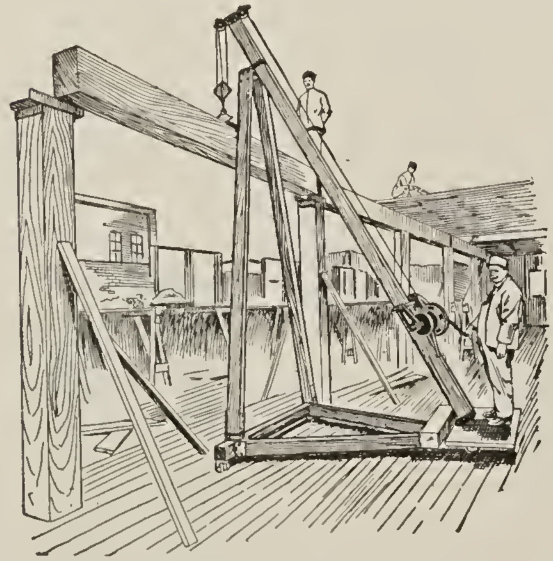
For longer lengths or more capacity write for price.

SASGEN POLE DERRICKS

Are used by many contractors, builders, stone and iron setters, setting trusses, timbers, girders, heavy joists, columns, stone, iron beams, etc., and they are about the most suitable and practical derricks for that purpose. Our Pole derricks are equipped with a crucible steel top sheave frame, which acts as a block and extends in the front, so the load can be hoisted without scraping pole. Has lugs for guy lines and sheave in back to bring cable to hoisting drum. Has a bottom sill equipped with rollers, well braced to pole. The 4 x 6 Pole Derrick is equipped with No. 3 winch, not geared, 100 feet steel cable and block. The 6 x 6 with No. 110 geared winch, 125 feet steel cable and block. The 6 x 8 with No. 130 geared winch, 125 feet steel cable and block. The 8 x 8 with No. 160 double purchase winch, 125 feet steel cable and block.

Size 4 x 6			Size 6 x 6			Size 6 x 8			Size 8 x 8		
Cap.	Ft.	Price	Cap.	Ft.	Price	Cap.	Ft.	Price	Cap.	Ft.	Price
1,400	16	......	2,500	18	......	4,000	18	......	8,000	18	......
to	18	......	to	20	......	to	20	......	to	20	......
1,500	20	......	3,500	22	......	5,000	22	......	10,000	22	......

The above are regular stock sizes. We have them in longer lengths.



SASGEN "A" FRAME DERRICK

This derrick is the most practical and handy machine for setting girders, timbers, columns, beams, joists, etc. Is made of malleable fittings. Is mounted on swivel rollers and can be easily moved around on floor. We also make this derrick in a Combination Pole and "A" Frame. This enables to use pole separate with guy lines. By removing 4 bolts the machine comes in 2 parts.

We can also furnish our "A" Frame mounted on 4-wheel truck, wheels about 16″ high and arranged so that the "A" Frame Derrick can be placed so as to raise from the end or from the side of truck. Derrick mounted on truck is most desirable where the surface is uneven and where it is necessary to run machine on planks. Our "A" Frames are equipped with 125 ft. steel cable, geared winch and block, complete, ready for use. Capacity 2,500 pounds.

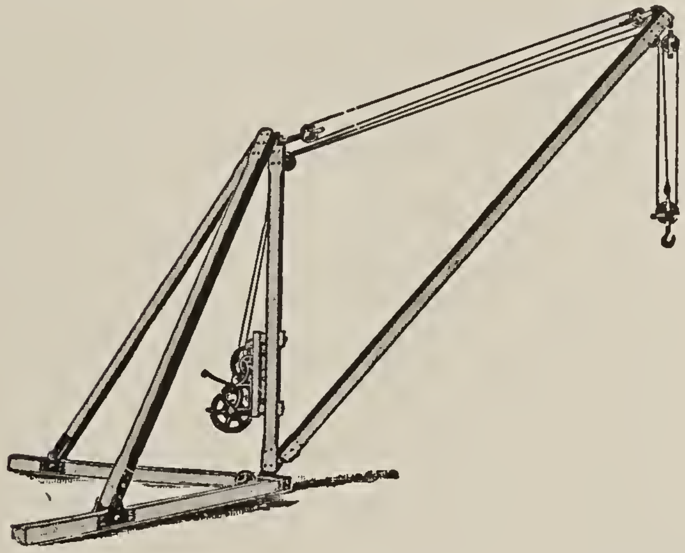
Regular "A" Frame Derrick....................................	20 ft. high	22 ft.
Pole Derrick Combination...	20 ft. high	22 ft.
Pole and "A" Frame Combination, mounted on 4-wheel truck............	20 ft. high	22 ft.

Apply to Distributor for Prices.

SASGEN STIFF-LEGGED DERRICKS WITH SPLIT MAST AND BOOM

Made From One to Four Ton Capacity

For Large Derricks Refer to Our Solid Timber Type



The Reasons Our Derricks are Stronger, Safer and Lighter than Other Makes is that We Use Steel Castings No Cast Iron

Our Stiff-Legged Derricks are built with split mast and boom, fitted throughout with crucible steel fittings, making the derricks light and strong and easy to set up. They can be used by hand or power and for the above reason are especially handy on buildings. Gears and frames of our double hoisting winch are also made of crucible steel, which means safety and no breaking of gears. Our 1-ton bottom sills work hinge-like in front and can be set at angle desired.

One-ton legs and sills are 4 x 6, split mast and boom two-2 x 6.

Two-ton legs and sills are 6 x 6, split mast and boom two-3 x 6.

Three-ton legs and sills are 6 x 8, split mast and boom two-3½ x 8.

Four-ton legs and sills are 8 x 8, split mast and boom two-4 x 10.

Price does not include Cable.

ONE-TON CAPACITY

No.	Length of Boom Feet	Equipped for Power	With Double #112 Drum Winch, also for Power
40	12		
41	14		
42	16		
43	18		
44	20		
45	22		
46	24		

TWO-TON CAPACITY

No.	Length of Boom Feet	Equipped for Power	With Double #141 Drum Winch, also for Power
200	18		
201	20		
202	22		
203	24		
204	26		
205	28		
206	30		

THREE-TON CAPACITY

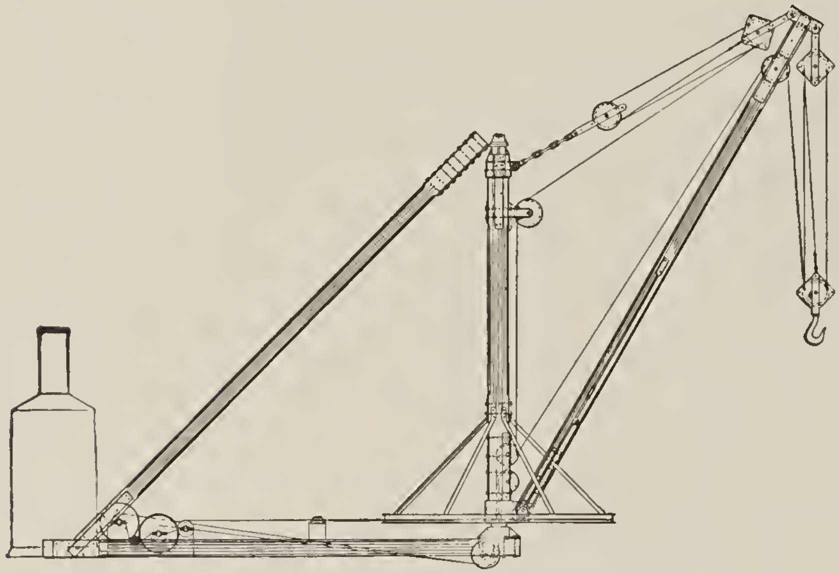
No.	Length of Boom Feet	Equipped for Power	With Double #141 Drum Winch, also for Power
220	20		
221	22		
222	24		
223	26		
224	28		
225	30		
226	32		
227	34		
228	36		
229	38		
230	40		

FOUR-TON CAPACITY

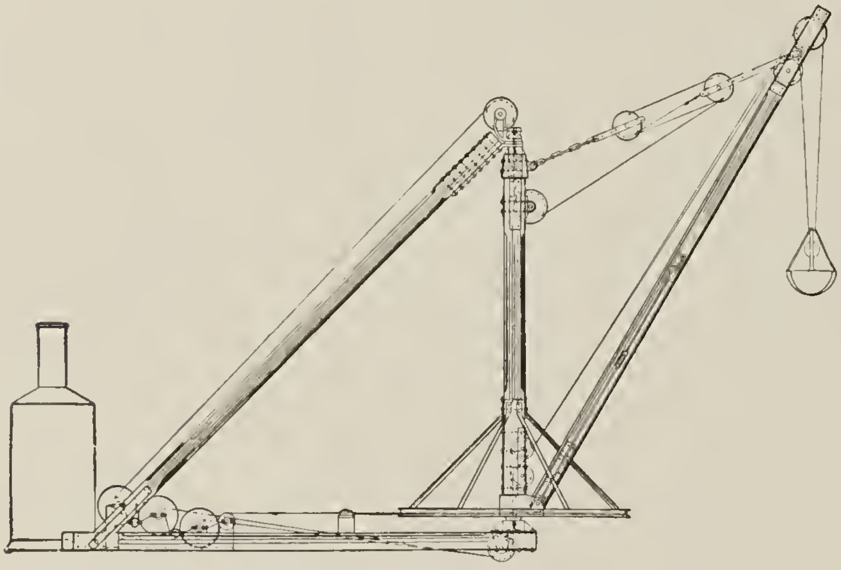
No.	Length of Boom Feet	Equipped for Power	With Double #151 Drum Winch, also for Power
240	30		
241	32		
242	34		
243	36		
244	38		
245	40		
246	42		
247	44		
248	46		
249	48		
250	50		

Apply to Distributor for Prices

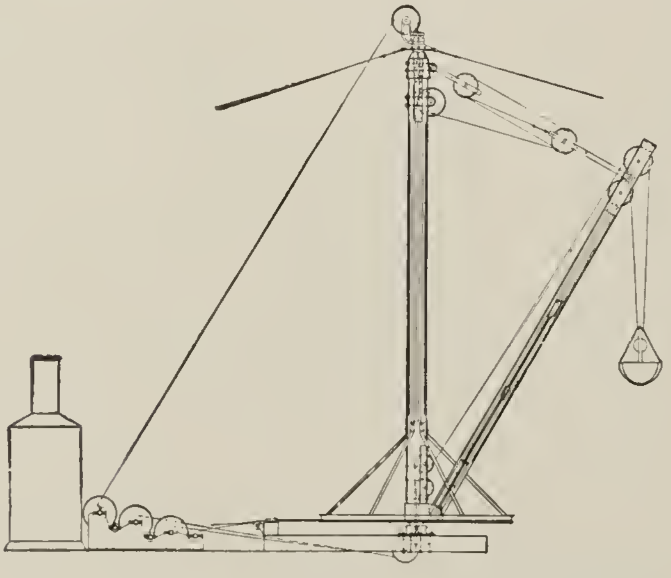
SASGEN SOLID TIMBER DERRICKS BUILT WITH CRUCIBLE STEEL FITTINGS



Stiff-Legged Derrick for Power with Bull Wheel



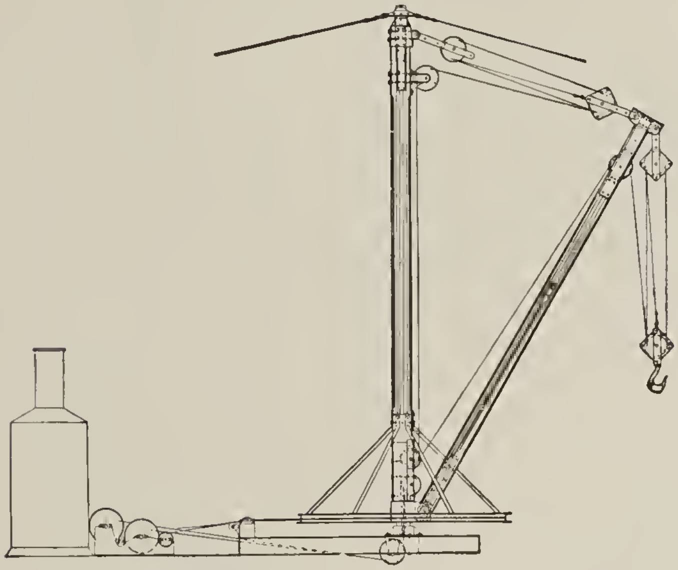
Stiff-Legged Derrick for Clamshell Work with Bull Wheel



Guy Line Derrick for Clamshell Work with Bull Wheel

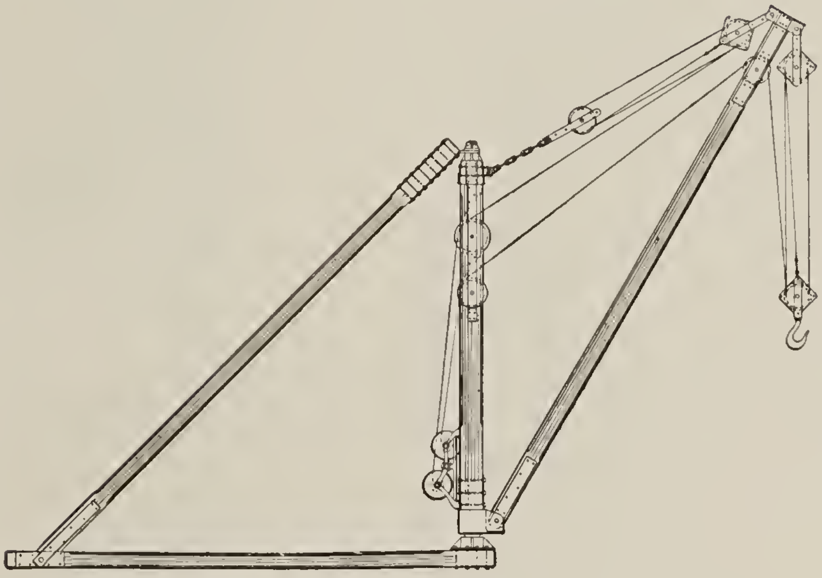
WE CAN FURNISH A COMPLETE LINE OF STIFF - LEGGED OR GUY LINE DERRICKS FOR POWER, HAND POWER OR CLAMSHELL WORK, ALSO WITH BULL WHEEL UP TO 70 FT. BOOM AND UP TO 10 - TON CAPACITY. FITTINGS ARE ALL CRUCIBLE STEEL, MAKING THEM LIGHT, STRONG, SAFE AND DURABLE. SHEAVES ARE CAST IRON FURNISHED WITH SELF - LUBRICATING BRONZE BUSHINGS.

SASGEN SOLID TIMBER DERRICKS BUILT WITH CRUCIBLE STEEL FITTINGS

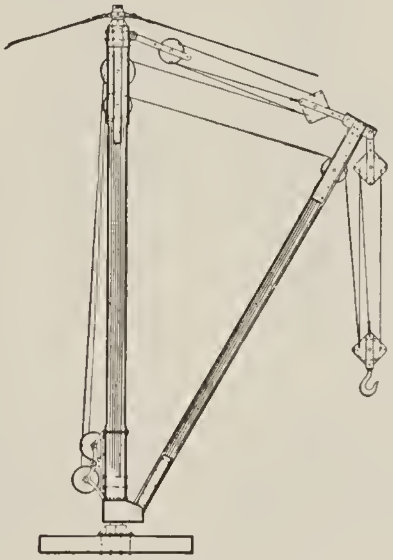


Guy Line Derrick for Power Only with Bull Wheel

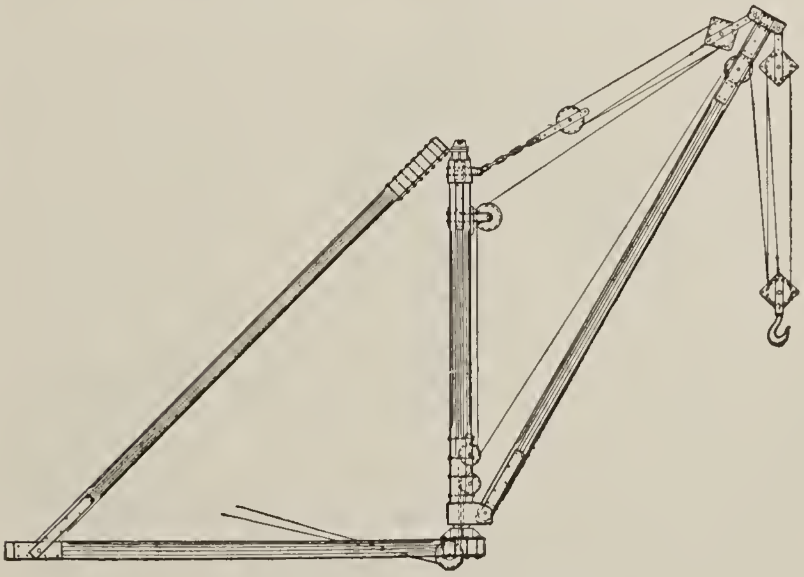
If desired, we can furnish the fittings only in 8, 10, 12 or 14-inch size. For prices on these Derricks, write and give capacity; length of boom; whether power, hand power or both; or for clamshell work, Stiff-Leg or Guy Line derrick; with or without bull wheel, also if cable is desired.



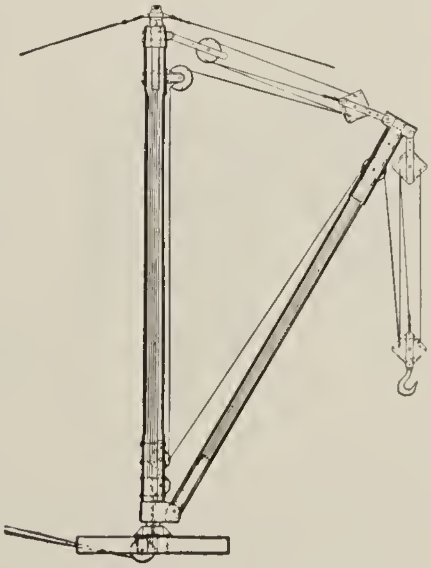
Stiff-Legged Derrick for Hand Power Only



Guy Line Derrick for Hand Power



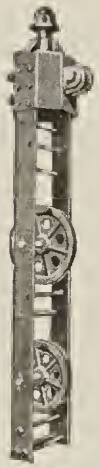
Stiff-Legged Derrick for Power Only



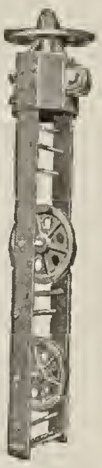
Guy Line Derrick for Power

SASGEN ALL CRUCIBLE STEEL DERRICK FITTINGS

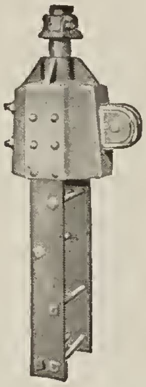
Fittings are crucible steel which makes them light, strong, safe and durable. Sheaves are cast iron furnished with self-lubricating bronze bushings. If desired we can furnish fittings only in 8″, 10″, 12″ or 14″ size. When writing state capacity, length of boom and how derrick is to be used.



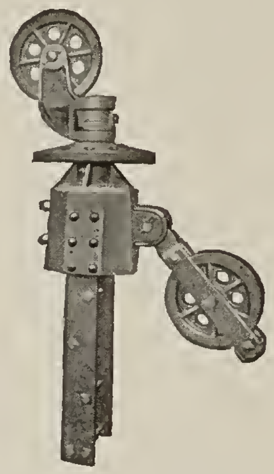
Stiff - Legged Derrick Mast Top for Hand Power



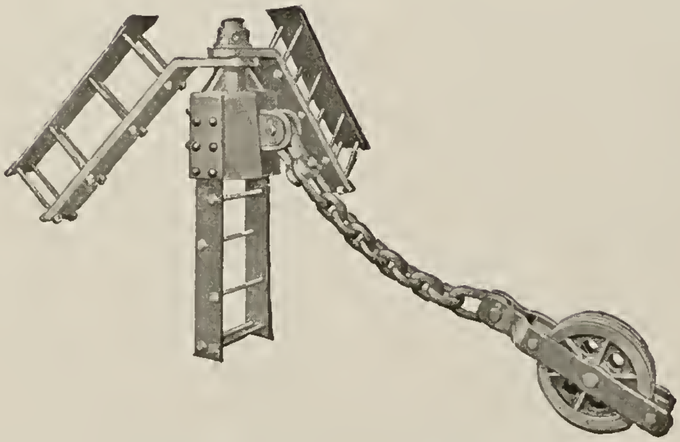
Guy Line Derrick Mast Top for Hand Power with Guy Cap



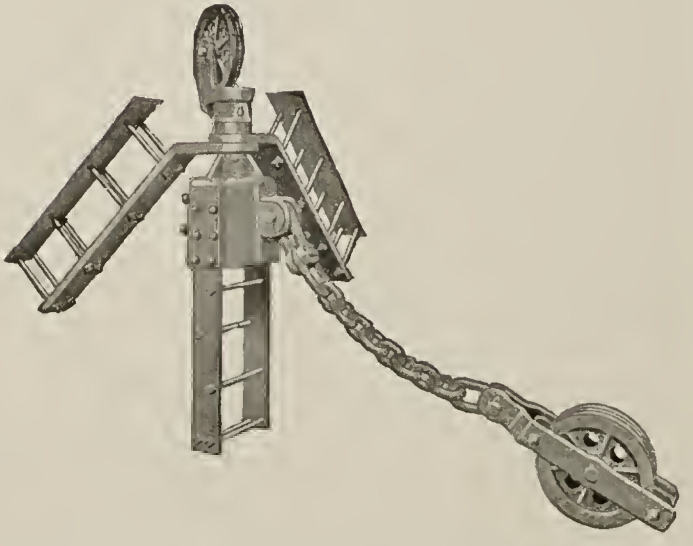
Stiff - Legged Derrick Mast Top for Power Derrick



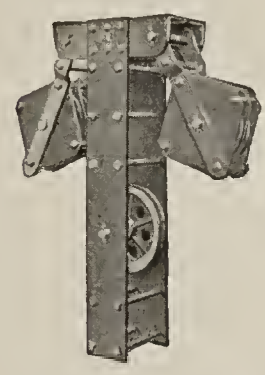
Guy Line Derrick Mast Top for Clam Shell Work with Rooster



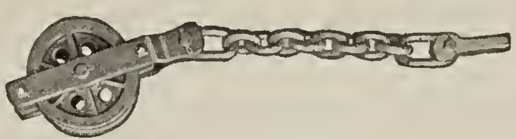
Mast Top with Chain Block and Goose Neck for Power Stiff-Legged Derrick



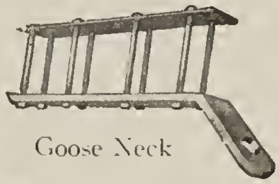
Mast Top with Chain Block and Goose Neck; also Rooster for Clam Shell work. For Stiff - Legged Derrick



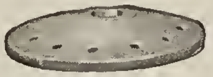
Boom Point with Blocks for Stiff-Legged or Guy Line Derrick



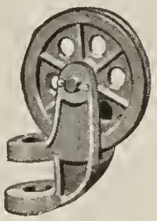
Chain Mast Block



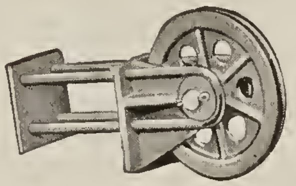
Goose Neck



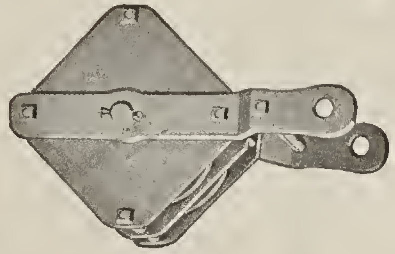
Guy Cap



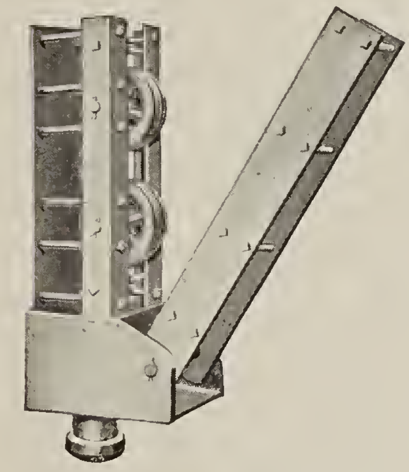
Rooster



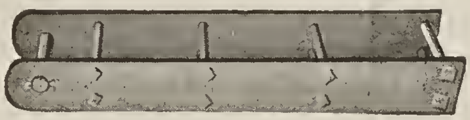
Mast Sheave Bracket



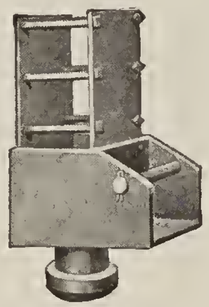
Double Boom Block



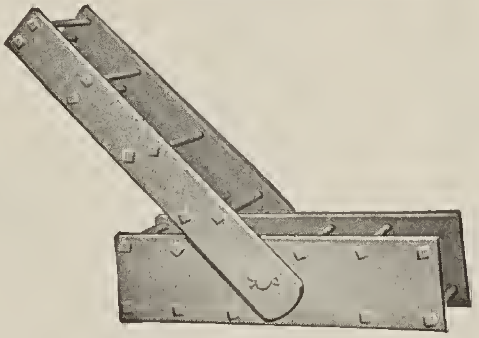
Mast Bottom for Power Stiff-Legged or Guy Line Derrick with Boom Bottom



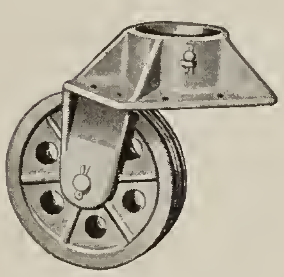
Boom Bottom Straps



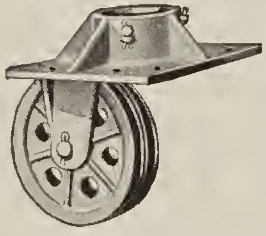
Mast Bottom for Hand Power Guy Line or Stiff-Legged Derrick



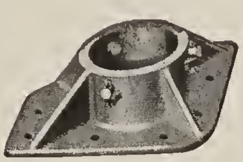
Sill and Leg Connection for Stiff-Legged Derrick



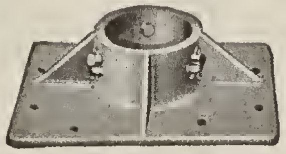
Mast Step for Power Stiff-Legged Derrick



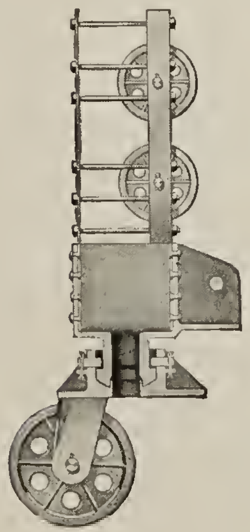
Mast Step for Power Guy Line Derrick



Mast Step for Hand Power Stiff-Legged Derrick



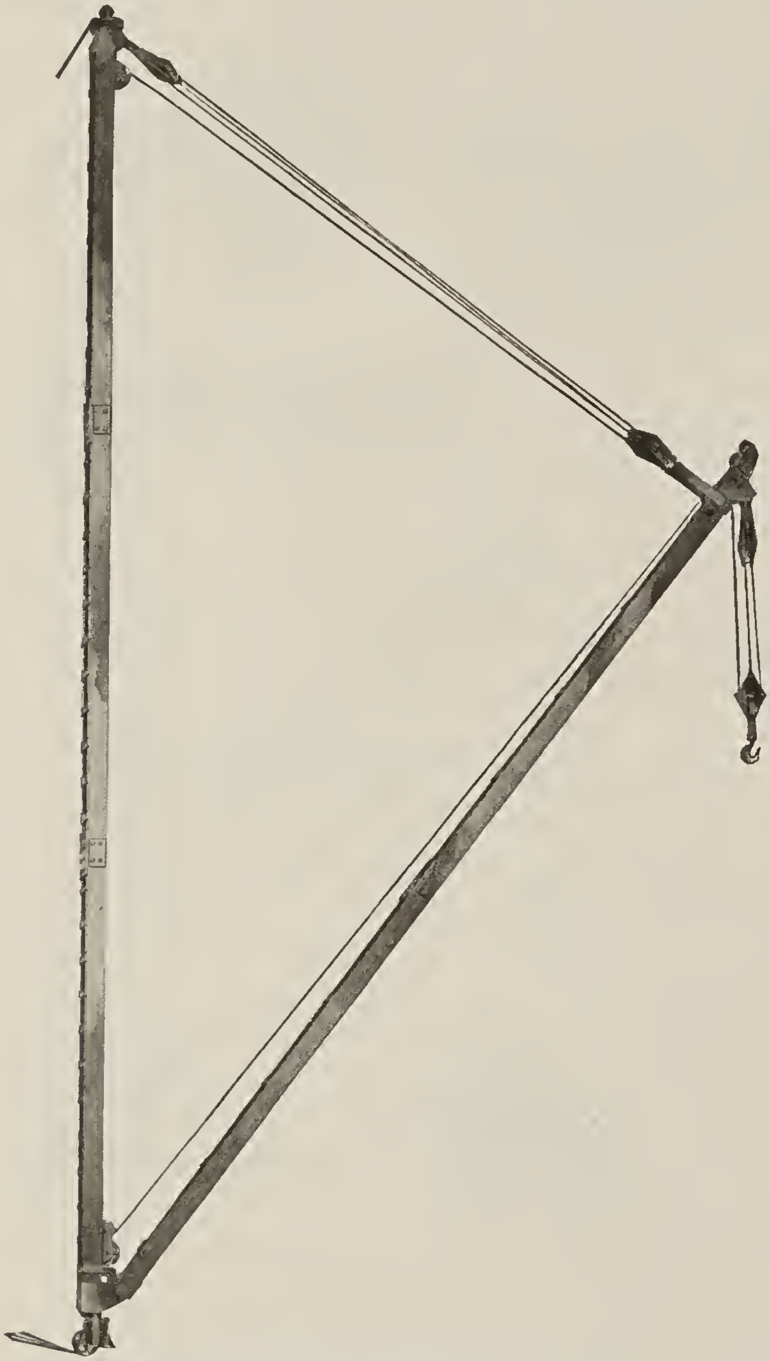
Mast Step for Hand Power Guy Line Derrick



This illustration is a sectional view of our standard cast steel foot block and cast steel mast step for power operation, showing the ball and socket bearing with oil chamber so constructed as to insure perfect lubrication at all times. 3 steel pins are provided in cup of step casting which extend over head of pintle on foot block casting to prevent unmasting of derrick. The angle sheave pin bearings and rear plate are riveted to inside of foot block. The bolts passing through mast timber can be drawn up to take care of shrinkage of timber, thus securing firmness of mast timber and foot block. For hand power the foot block has 2 steel plates riveted inside with bolts passing through mast. Mast step is same as for power, but without bottom sheaves.

UTILITY STEEL DERRICKS

Manufactured by CLYDE IRON WORKS, Duluth, Minnesota



Guy Utility Derrick
35 ft. boom, 44 ft. mast, 3 ton capacity

The steel derrick illustrated on this page is specially designed for general utility work, **where the loads do not exceed three tons at any angle of the boom.** Utility steel derricks may be furnished in either guy or stiff leg type. They are particularly adapted for bridge contractors' work, where they may be used for handling structural beams, timbers and other materials, handling leads for pile driving, and excavating with a light clamshell bucket. These derricks are also useful to the general contractor in building and construction work, steel erecting, stone setting, and all similar handling jobs.

The derrick members are built with comparatively light sections for convenient handling. The mast bottom is made of semi-steel, of the ball and socket type. The sheaves are grooved for wire rope (except the pile line sheaves) and have oil cellar lubricated bronze bushings.

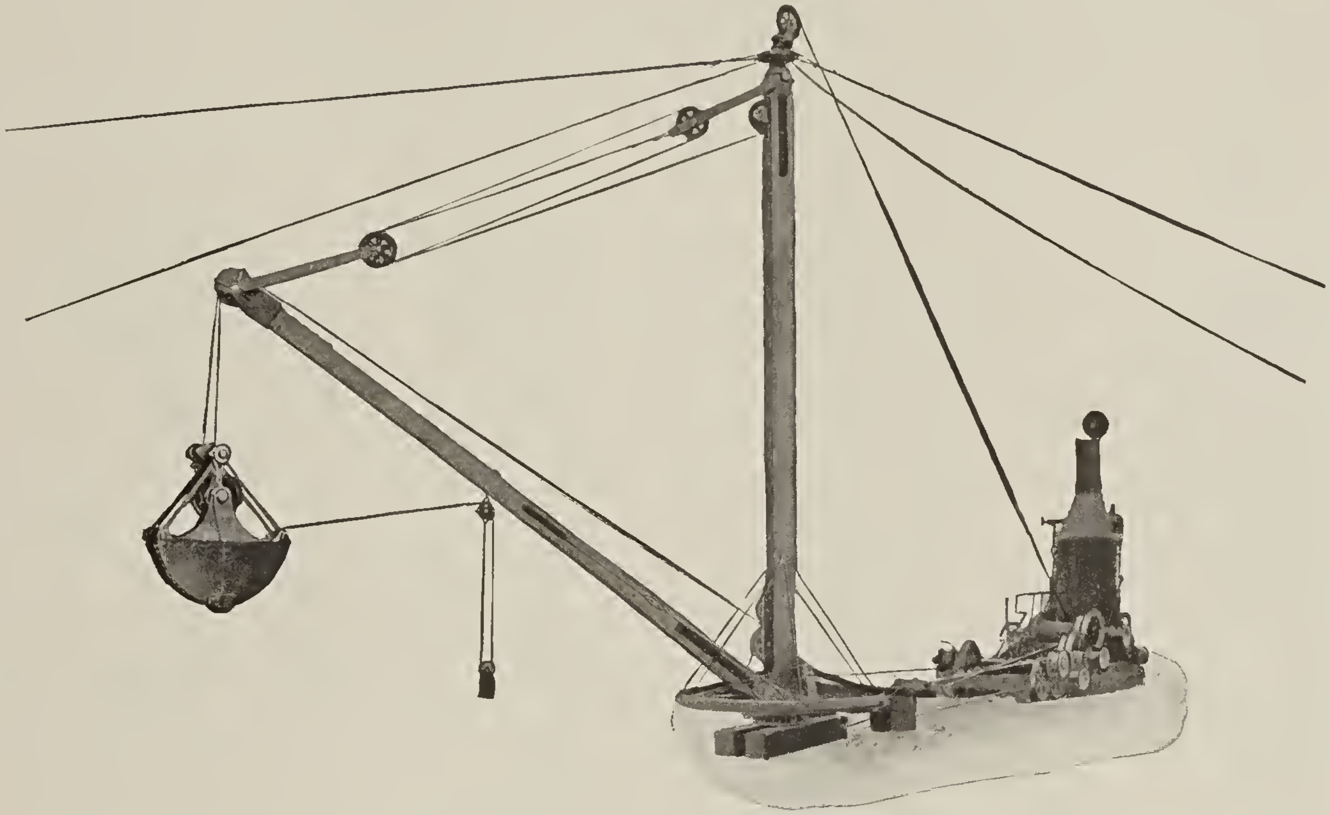
Either the guy or stiffleg type is readily handled by a light hoist, two or three drum, depending on the work to be done. The boom may be peaked by a hand power hoist, if desired. A line-pull of 2500 to 3500 lbs. is required, depending on the load to be lifted. A bullwheel can be installed for swinging the boom by power, or hand swinging can be easily accomplished.

The complete derrick includes the mast, boom, and stifflegs (on the stiffleg type only), all castings, straps, sheaves, and blocks.

Wire rope, bullwheel, guide sheaves, pile driver leads, hand-power, hoist, or pile driver hammer or follower **are not included,** but will be furnished at an additional price. Sills may also be purchased for the stiffleg derrick if desired.

CLAM SHELL GUY DERRICKS

Manufactured by CLYDE IRON WORKS, Duluth, Minnesota



A clam shell or orange peel bucket on a properly rigged, quick acting derrick, constitutes one of the most efficient means of handling materials and doing many kinds of excavating. Clyde clam shell derricks embody all the superior features of the Clyde standard derricks as to strength, convenience, simplicity and interchangeability of parts. The boom line runs from the engine directly to the top of the derrick, so that only the two bucket lines pass through the pivot at the mast bottom, consequently there is a minimum amount of wear on the wire ropes.

The boom end sheaves are carefully guarded to prevent the bucket lines coming off when slack, and long rollers underneath the boom end take the side pull of the bucket ropes, when slewing the load. This saves the boom and sheaves from damage, a matter usually neglected in ordinary fittings. The sheaves are placed tandem in the center line of the boom end and avoid twisting stresses in the boom timber.

All sheaves are supplied with oilcellar lubricated bronze bushings.
The fittings include all castings, straps, sheaves, and bolts for a complete derrick.

The fittings do not include bull wheel, guide sheaves for bull wheel ropes, boom truss rods, clam shell bucket, and ropes, which are extras, and will be furnished at an additional price.

When ordering state:

- Size bucket to be used,
- Make and style of bucket,
- Heaviest load to lift for general hoisting service,
- Length of boom,
- Size and style of engine to operate derrick,
- What length of guys can be used.

Similar derricks designed for straight hook work can also be furnished for either power or handpower operation.

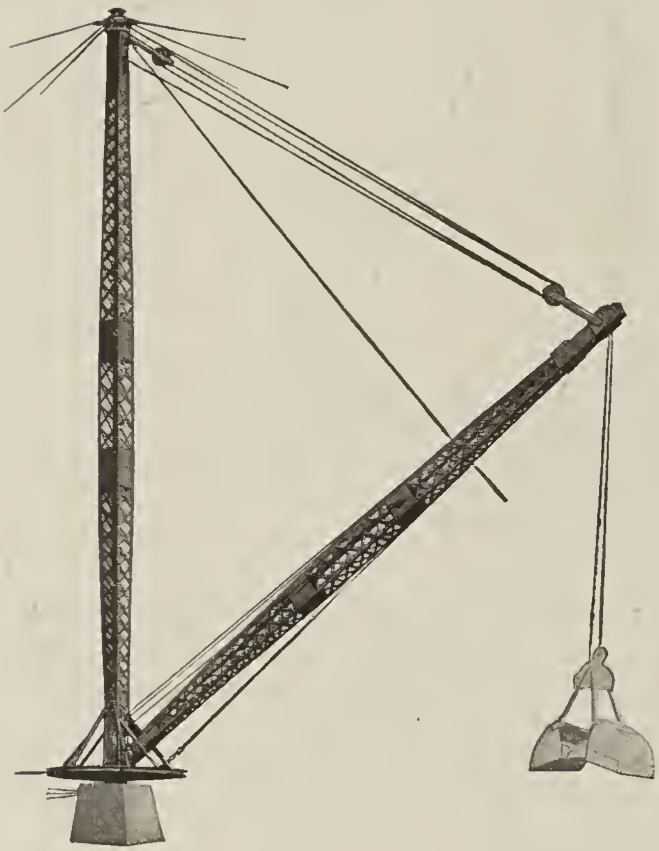
COMPLETE SETS OF FITTINGS

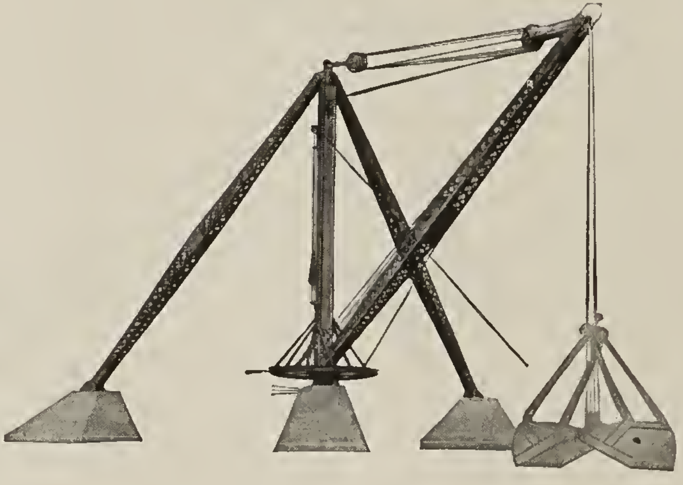
Catalog Number	7076	7077	7078	7079	7080
Size of Bucket, Coal . . . Cubic Yards	1	2	3	4	. . .
Size of Bucket, Dry Sand . . . Cubic Yards	¾	1½	2½	3	. . .
Size of Bucket, Wet Sand . . . Cubic Yards	¾	1	2	2½	3
Nominal Capacity—ordinary hoisting work (Net Tons)	3	6	10	16	24
Size of Mast (Inches)	10x10	12x12	14x14	16x16	18x18
Longest Mast—Untrussed	42 ft.	50 ft.	55 ft.	60 ft.	65 ft.
Size of Boom (Inches)	10x10	12x12	14x14	16x16	18x18
Longest Boom—Untrussed	34 ft.	40 ft.	45 ft.	50 ft.	55 ft.
Approximate Shipping Weight (Lbs.)	2500	2950	4500	6200	8200

IMPORTANT: Digging with clam shell or orange peel buckets is the hardest and roughest work done with derricks and requires the use of larger sizes than ordinary hoisting. For this reason, large derricks are listed with comparatively small bucket capacities. **The life of an outfit is greatly lengthened and trouble avoided, by allowing an excess of strength for this class of work.**

STEEL DERRICKS

Manufactured by CLYDE IRON WORKS, Duluth, Minnesota





Clyde steel derricks are specially designed to meet all the uses in the contracting and industrial field and to give unlimited satisfaction and performance. All detail parts have been given special attention in regard to the design and workmanship, thereby creating a derrick of superior quality. Rigidity is obtained in the boom and mast on steel guy derricks by a latticed angle construction with double lacing with heavy reinforced joints, and on the stiff leg derrick the boom and stiff legs are of the same construction with the mast of channel construction plated throughout.

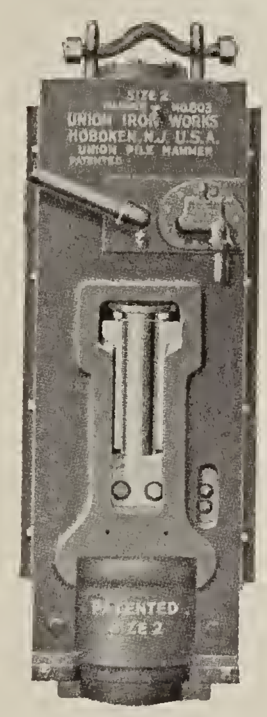
All sections are constructed in lengths convenient to handle and erect, giving portability as well as strength.

Another important feature of this derrick is the renewable double bearing ball and socket mast bottom, which assures perfect alignment and easy swinging of the boom at all times. All sheaves are grooved for wire rope and are fitted for grease gun lubrication with bronze bushings. Derricks may be had with boom lengths of 50, 60, 70, 80, 90 or 100 feet with capacities of 5, 7½, 10, 15 or 20 tons

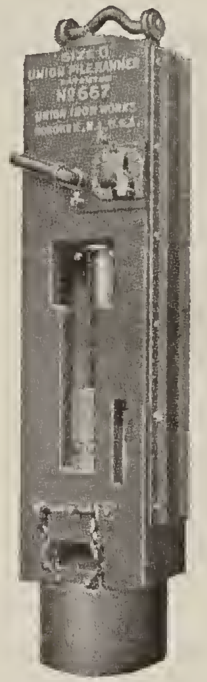
The complete derrick includes a mast, boom, sheaves, all castings, straps, bull wheel, guide sheaves and stiff legs on the stiff leg type. Derricks are equipped with a combination boom end for either clam-shell or hook work. When ordering state heaviest load to lift at maximum radius, length of boom, size and style of engine to operate derrick, what length of guys must be used, if guy derrick.

UNION PILE HAMMERS

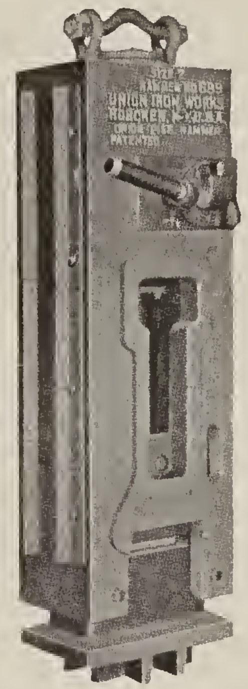
"THEY DRIVE AND PULL"


SIZE 2
UNION IRON WORKS
HOBOKEN, N.J. U.S.A.
UNION PILE HAMMER
PATENTED

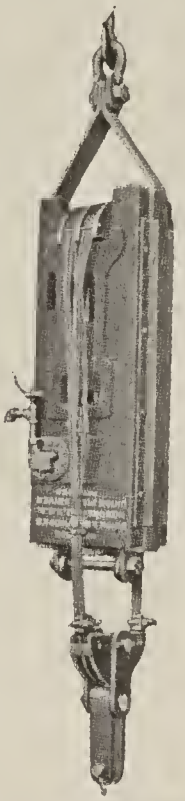
Union Hammer with Patent Round Pile Base


SIZE 0
UNION PILE HAMMER
Nº 667
UNION IRON WORKS

Union Hammer with Patent Cushion Cap for Concrete Piles


UNION IRON WORKS
PATENTED

Union Hammer with Patent Cushion Cap for Steel Sheeting



Union Hammer Rigged for Pulling Piles

MADE IN EIGHT SIZES TO HANDLE THE HEAVIEST CONCRETE PILES OR THE LIGHTEST WOOD AND STEEL SHEETING

SPECIFICATIONS

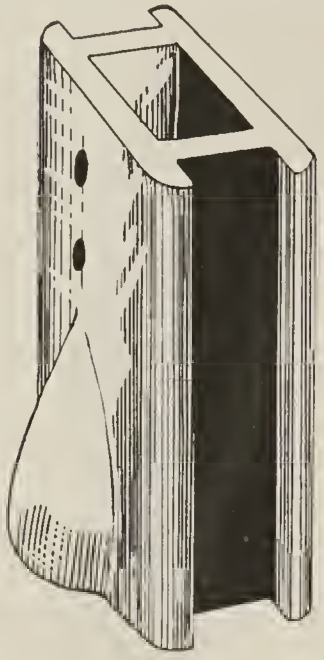
UNION PATENT PILE HAMMERS

Size No.	Code Word	Weight with Base	Weight of Striking Parts	Cylinder Diameter, Stroke	Force of One Blow Steam Plus Ram	Energy Developed One Blow	Blows per Minute	Max. Boiler H. P. Required 100 Lbs. Per Sq. In.	Cu. Ft. Compressed Air at 100 Lbs. Per Sq. In.	Size of Hose
		Lbs.	Lbs.	Inches	Lbs.	Foot Lbs				Ins.
00	ABADO	20,000*	4,000	14 x36	16,320	48,960	100	125		3
0	ABAHS	13,400	2,650	10½x24	9,575	19,150	110	50	750	2
1	ABAIM	8,600	1,540	9½x21	7,200	12,600	130	35	600	1½
2	ABALD	5,700	950	7¼x16	4,250	5,650	145	25	300	1¼
3	ABASO	4,250	680	6¼x14	3,125	3,625	170	20	250	1¼
4	ABAUD	2,500	350	5¼x12	2,080	2,080	200	12	150	1
5	ABCIP	1,450	200	4¼x 9	1,334	1,000	240	10	100	1
6	ABERN	850	110	3¼x 7	775	450	340	8	75	¾
8	ABFOD	195	45	2⅜x6½	399	220	475	5	50	¾

*Base not included.

Efficiency computed on 80-pounds mean effective pressure.

EQUIPMENT FOR DROP HAMMER PILE DRIVERS.



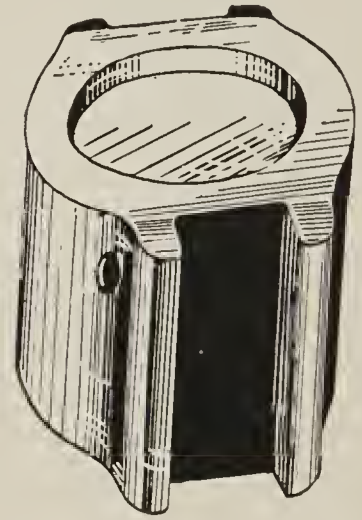
DROP HAMMERS

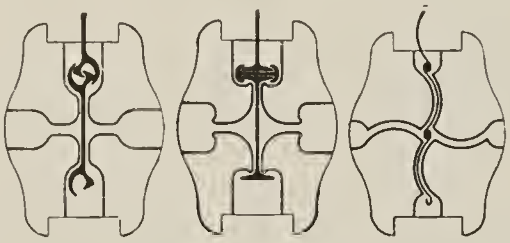
Our drop hammers are made especially for us and are designed by our own engineers. These hammers are as plain and as strong as they can be made. There are no special corner castings or fancy lugs which have no bearing on the utility of the hammer. We carry these hammers in stock at all times and are able to give delivery on the following sizes. All of our hammers are built for six inch leads and are eighteen inches between the leads.

FOLLOWER.

Our followers are built to work with our hammers. The table shows the size followers we carry in stock. It also shows the size followers to work with each size hammer. These followers are cupped to fit over the pile and to take the impact of the hammer.

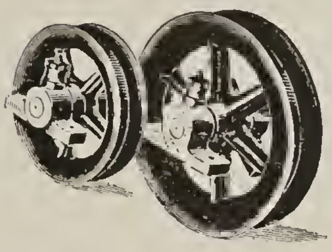
We can also furnish followers to fit any style of sheet piling. The cut shows only a few. When you need this kind of equipment just write us the specifications of your piling and will make an estimate. These followers can be designed for either steam or drop hammers.





Hammer, Lbs.	Follower, Lbs.	Size Bottom Sheave	Size Top Sheave	Size Wire Rope	Size Manila Rope
1000	400	16 inch	12 inch	½ inch	1¼ inch
1200	500	16 inch	12 inch	½ inch	1¼ inch
2000	800	16 inch	12 inch	⅝ inch	1½ inch
2400	950	20 inch	16 inch	⅝ inch	1¾ inch
3000	1200	20 inch	16 inch	⅝ inch	2 inch

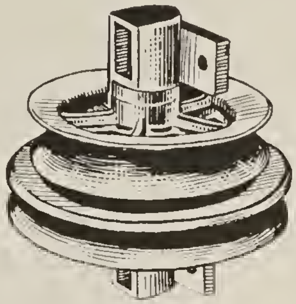
STANDARD PILE SHEAVES.



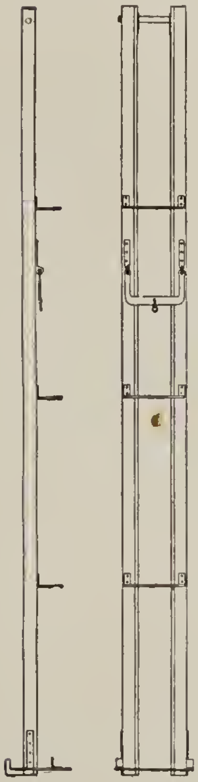
Our sheaves are made according to the new principles and are pressed onto the shaft as it has been found advisable to put the wear on the bearings. The bottom sheave runs loose on a shaft which runs from sill to sill. It may be provided with a wooden house or box to prevent the line from jumping off when slack. We can furnish an extra sheave the same size to run on the same shaft to carry the pile line if required.

STEAM HAMMER TOP SHEAVES

This cut shows a wire rope hammer sheave and a manila rope pile sheave which has been designed for steam hammer work. On order we can furnish both sheaves for wire rope or both for manila rope. The shaft is located directly over the center of the leads. A swiveling bottom sheave can be furnished with a bolt running through your bottom timbers. Be sure to state the kind of line to be used and the thickness of your timber.

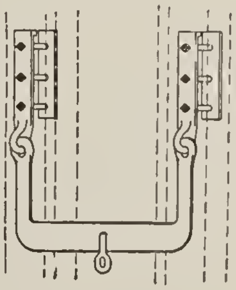


IRONS FOR LEADS



In erecting your own leads we can furnish you with all the irons and braces necessary. Write us a full description of your leads giving the dimensions of the timbers and hammer and we will furnish an estimate. Be sure to state whether you want channel iron tracks for your hammer or only the wood facting. Whatever your layout may be, whether your piles are to be driven straight or on an angle. We can furnish HAMMER STOPS as are illustrated in the small cut. These stops are made in all sizes and are made to work on drop hammers or steam hammers.

On page 337 you will find a complete description of steam pile hammers and on page 573 we have described our air driven hammers. If you are considering doing any pile driving please write us for our recommendations and quotations. We carry all kinds of cranes, hoists and derricks which are especially adapted to pile driving. Write for estimates.



Gas+Air---1 yard
Shovel -- Dragline -- Crane -- Clamshell
Drag Shovel

The Gas+Air machines have unusual operating characteristics because of the direct air engine drives for crowding and swinging, which act instantly at the touch of throttle levers. The hoist operates directly from the gasoline engine. This application of power provides unusual speed, smoother and more flexible operation. It gives the operator positive full force crowd at all times.

FAST WORKER.—It is easy for the operator to produce big yardage because of the greater power available and perfect control. The full, independent power of the crowd and swing can be used even when the full power of the gasoline engine is being used for the hoist.

GA-2—Gas+Air 1-Yard Shovel

EASY TO HANDLE.—The simplicity and accuracy of control enable the operator to work without strain or fatigue throughout the day.

ECONOMY.—The Gas+Air has all the economies and conveniences of gasoline fuel—plus the output that only a three engine shovel can give. Furthermore, it puts power to work that is usually wasted. Whenever full power is not needed for hoisting or propelling, the air compressor stores up air to run the crowd and swing engines.

GA-2—1-Yard Gas+Air Shovel

QUICK CHANGE-OVER.—Mechanically simple—any operator can quickly learn to operate the Gas+Air. It is easily convertible in the field to clamshell, crane, dragline, or drag shovel.

OWNERS ARE ENTHUSIASTIC.—Hundreds of enthusiastic reports have been received from owners operating these machines in the hardest kind of digging. Let us put you in touch with owners in your vicinity.

Diesel+Air

The Diesel+Air operates on the same principle as the Gas+Air. It has all the advantages found in the Gas+Air, with still lower fuel costs, and the tremendous lugging power of the Diesel engine.

You can rely on Bucyrus-Erie Company to recommend for your needs the machine that will give you the greatest returns on the money invested.

Gasoline Machines

1020—½-Yard Gasoline Shovel

In the "straight gasoline" field the 1020—½-yard and 1030—¾-yard Bucyrus-Eries have been rated by users as in a class by themselves. You can handle more material with them at a lower cost per yard.

RUGGED AND SIMPLE.—In these ½ and ¾-yard machines you find the same rugged construction that has made Bucyrus-Erie machines famous for big, trouble-free output; the same simple sturdiness that you find in the big Bucyrus-Erie quarry shovels and strippers; the same ease of operation; the same accessibility of parts. This means more dirt per month at a lower cost. A one piece cast steel truck frame and turn table, heavier shafts, bigger clutches, and stronger caterpillar type mounting make these machines practically indestructible. Upkeep has been reduced to a minimum, and smoother and more efficient operation has been obtained by the proper application of anti-friction bearings to every shaft above deck; transmission gears are enclosed and bath lubricated.

1030—¾-Yard Gasoline Clamshell

COMPLETE ACCESSIBILITY.—Parts subject to wear have been made easy to replace. The operator has complete accessibility to every working part above deck. There is plenty of room around the machinery.

All controls including motor starter, choke, boom hoist and traveling clutches, and steering controls, are within easy reach of the operator. He does not have to leave his position in the cab.

1030—¾-Yard Gasoline Shovel

CONVERTIBILITY.—Any mechanic of ordinary experience can quickly convert either the 1020 or 1030 shovel to Clamshell, Crane, Dragline, Pile Driver or Drag Shovel. No change in main machinery is necessary. These machines are easily equipped—right on the job—to meet field conditions by merely changing front end equipment. You have a general utility machine with an equally high operating efficiency on all classes of work.

Steam Machines

Bucyrus-Erie Class A—½-yard, B2—⅞-yard and 41-B—1¼-yard Steam Machines have earned an enviable reputation for unequalled working speed, ease of handling, and rugged simplicity. Perfection in mechanical details, resulting from years of development, give lowest operating and maintenance costs for machines of this type. They are easily convertible to meet a wide range of requirements.

B-2—⅞-Yard Steam Shovel

Diesel Machines

The first Diesel Shovel was built by Bucyrus-Erie in 1922. Continuous development and production since then make the present Bucyrus-Eries the only "seasoned" Diesels on the market today.

DESIGNED FOR DIESEL OPERATION.—The 1020—½-yard, 1030—¾-yard, D-2—1-yard and E-2—1¼-yard machines have been specially designed to meet the requirements of Diesel operation. They have proved their superiority by lowering the digging cost per yard on the toughest kinds of jobs. The rugged strength of these machines is based on simplicity—fewer parts made of carefully selected materials and designed to conform with the best practices revealed by fifty years' experience building excavating machinery. It is one reason why Bucyrus-Erie produces long-lived equipment.

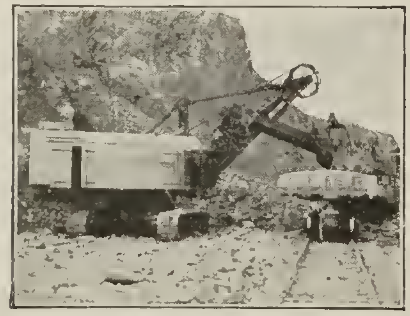
D-2—1-Yard Diesel Shovel

MANY OUTSTANDING ADVANTAGES. — Bucyrus-Erie Diesels have many outstanding advantages. They can be worked anywhere—fuel haulage is lowest—fire risk is reduced to a minimum by the use of low gravity oil. Control is simple—operator does not tire from a full day's work. There is no carburetor or ignition system to give trouble. The Bucyrus-Erie Atlas Diesel is a heavy duty slow speed engine, simple and sturdy—designed for excavation work. The action is smooth and the flow of power is steady—high torque being delivered even when the engine is barely turning over. It is capable of heavy peak loads and continuous hard work. Easy starting and full power is available from the start. These engines operate on cheap fuel oil, and use much less of it than a gasoline engine does of gasoline. The fuel cost is often only ⅛ to ¾ that of a gasoline machine handling the same yardage.

41-B—1½-Yard Electric Shovel

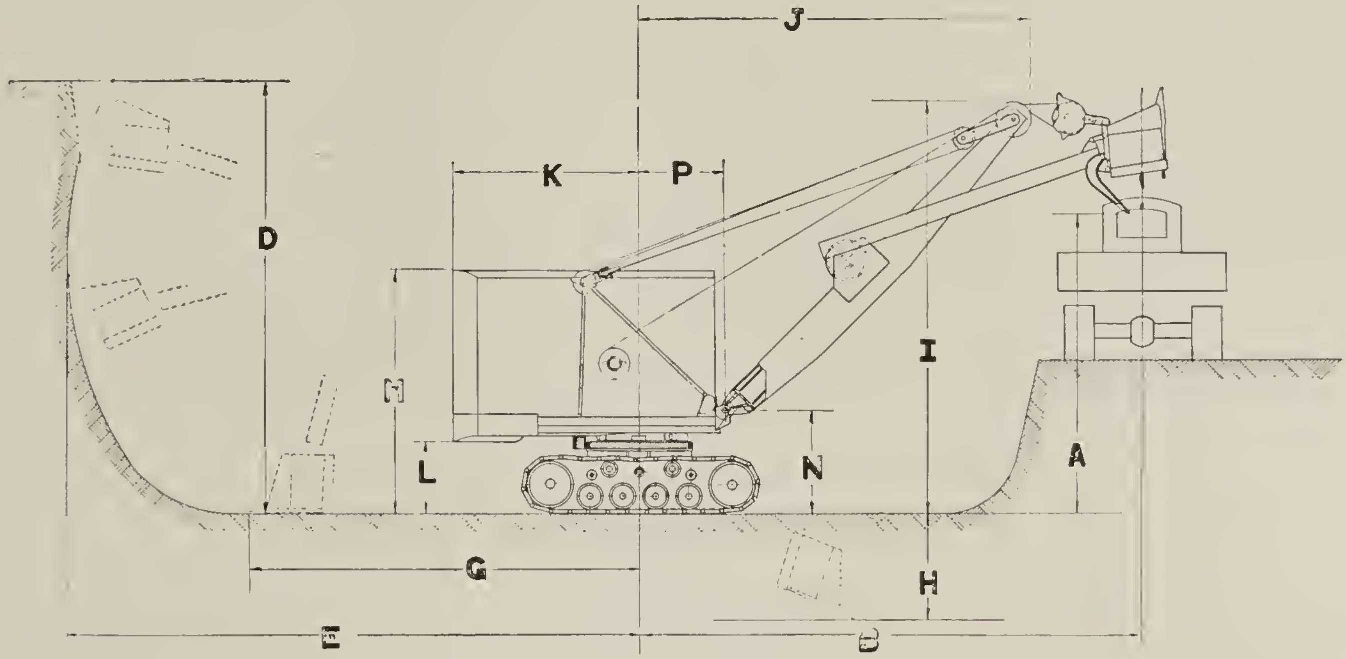
BIG MONEY MAKERS.—The remarkable economy of operation and easy convertibility for any type of service enable these machines to pay highest dividends on money invested in them.

2 Yard to 16 Yard Machines



120-B—4-Yard Electric Shovel

In addition to a complete line of small machines of which typical models are listed on these pages—Bucyrus-Erie machines ranging from 2-yards to 16-yards are built for every class of digging. Engineers are available to consult with you and recommend equipment most economical and satisfactory for your requirements. Drop us a line giving a description of your work and let us send you bulletins describing suitable machines.



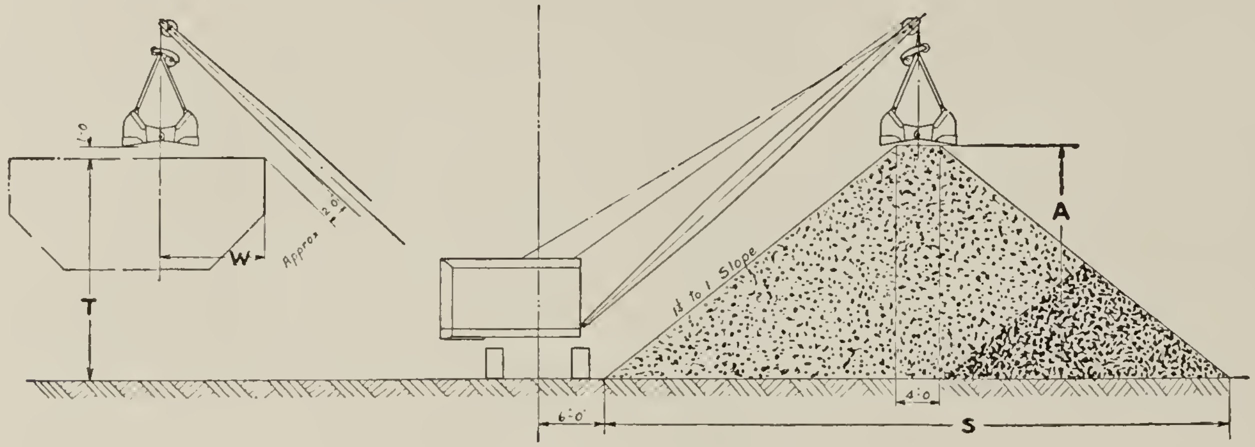
BUCYRUS-ERIE ½ TO 1¼ YARD SHOVELS

Working Dimensions and Specifications

Type Machine Power	A Steam	B2 Steam			41B Steam		GA2—DA2 Gas+Air—Diesel+Air		
Dipper Capacity—Cu. Yds.	½ or ⅝	⅞	⅞	⅞	1¼	1	1	1	1
Boom	16′-0″	17′-6″	19′-9″	21′-3″	21′-0″	26′-0″	21′-3″	22′-6″	24′-0″
Handle	13′-0″	14′-0″	16′-0″	18′-4″	15′-0″	17′-0″	14′-0″	16′-0″	18′-4″
Angle of Boom	45°	45°	50°	55°	45°	55°	45°	50°	55°
A—Dumping Height—Max.	9′-9″	11′-9″	14′-6″	16′-6″	14′-6″	23′-0″	15′-6″	17′-9″	21′-0″
B—Dumping Radius—At Max. height	20′-9″	23′-3″	25′-9″	27′-3″	26′-6″	25′-3″	24′-9″	25′-0″	25′-6″
B1—Dumping Radius—Max.	20′-9″	23′-6″	26′-0″	28′-0″	27′-0″	28′-6″	25′-6″	26′-3″	28′-0″
I—Cutting Height—Max.	14′-6″	17′-9″	20′-9″	23′-0″	21′-9″	32′-0″	22′-6″	25′-0″	28′-3″
I—Cutting Radius—Max.	23′-3″	26′-3″	29′-0″	30′-9″	30′-3″	31′-9″	28′-9″	29′-6″	31′-3″
G—Radius of Level Floor—Max.	14′-0″	16′-9″	17′-6″	17′-6″	19′-9″	20′-9″	19′-0″	18′-0″	18′-0″
H—Digging Depth Below Ground Level—Max.	5′-0″	5′-9″	6′-9″	8′-0″	6′-3″	5′-6″	5′-3″	6′-9″	8′-3″
I—Clearance Height of Boom	15′-9″	18′-0″	20′-9″	23′-0″	21′-3″	27′-6″	20′-6″	22′-6″	25′-0″
J—Clearance Radius of Boom	14′-9″	16′-9″	17′-0″	16′-6″	20′-6″	20′-6″	19′-9″	19′-0″	18′-3″
K—Clearance Radius of Revolving Frame	8′-8″	9′-10″	10′-2″	10′-2″	11′-8″			10′-11″	
L—Clearance Under Frame to Ground Level	3′-4″		4′-1″		3′-3″			3′-3″	
M—Clearance Height—Boom Lowered	12′-5″		12′-6″		12′-10″			11′-5″	
N—Height of Boom Foot Pin above Ground Level	3′-10″		4′-8″		5′-2″			4′-8″	
P—Distance; Boom Foot Pin to Center of Rotation	2′-10½″		3′-6¼″		4′-7″			3′-9½″	

Type Machine Power	1020 Gasoline Diesel or Electric	1030 Gasoline, Diesel or Electric		D2 Diesel			E2 Diesel	
Dipper Capacity—Cu. Yds.	½	¾ or ⅞	¾	1	1	⅞	1¼	1¼
Boom	20′-0″	20′-6″	23′-0″	23′-0″	26′-0″	28′-0″	26′-0″	29′-6″
Handle	13′-0″	13′-0″	15′-0″	12′-6″	15′-9″	17′-0″	15′-0″	17′-0″
Angle of Boom	55°	50°	55°	45°	50°	55°	45°	50°
A—Dumping Height—Max.	16′-6″	15′-9″	19′-6″	12′-9″	17′-0″	20′-3″	17′-0″	19′-6″
B—Dumping Radius—At Max. height	19′-9″	21′-9″	22′-0″	22′-6″	24′-9″	24′-3″	25′-3″	27′-9″
B1—Dumping Radius—Max.	21′-6″	23′-3″	24′-3″	22′-9″	25′-9″	26′-9″	25′-9″	29′-0″
D—Cutting Height—Max.	22′-6″	22′-3″	26′-3″	19′-9″	24′-3″	27′-9″	22′-3″	27′-3″
E—Cutting Radius—Max.	24′-0″	25′-6″	27′-0″	26′-0″	28′-9″	29′-9″	30′-0″	32′-3″
G—Radius of Level Floor—Max.	15′-0″	16′-9″	17′-0″	17′-6″	18′-3″	17′-9″	20′-0″	21′-0″
H—Digging Depth Below Ground Level—Max.	3′-9″	3′-6″	4′-0″	4′-6″	5′-6″	6′-9″	5′-9″	6′-0″
I—Clearance Height of Boom	21′-9″	21′-9″	24′-9″	22′-0″	25′-6″	28′-6″	24′-9″	29′-0″
J—Clearance Radius of Boom	16′-0″	18′-3″	18′-3″	21′-3″	21′-9″	21′-3″	24′-0″	24′-6″
K—Clearance Radius of Revolving Frame	8′-2″	8′-11½″			10′-5″		11′-9″	
L—Clearance Under Frame to Ground Level	3′-2″	3′-8″			3′-9″		4′-2″	
M—Clearance Height—Boom Lowered	10′-9″	11′-0″			11′-2″		12′-3″	
N—Height of Boom Foot Pin above Ground Level	4′-7″	5′-0″			4′-8½″		5′-2″	
P—Distance; Boom Foot Pin to Center of Rotation	3′-9″	4′-1½″			4′-1″		4′-7″	

Dimensions and Specifications are subject to slight change from time to time.
Write for latest bulletin and specifications on any of these machines.



CLAMSHELL WORKING RANGES

MAXIMUM BIN DIMENSIONS

Type Machine		A	1020 1030 D-2	1030 B 2 D-2 GA-2	41-B E-2 D-2	41-B E-2
Boom Length		30′-0″	35′-0″	40′-0″	45′-0″	50′-0″
20′-0″ Radius	T	20′-0″	.....	.....	.....	.....
	W	3′-6″	.....	.....	.....	.....
25′-0″ Radius	T	16′ 0″	22′-0″	28′-0″	.....	.....
	W	6′-6″	5′-0″	4′-0″	.....	.....
30′-0″ Radius	T	10′-0″	18′-0″	25′-0″	31′-0″	.....
	W	11′-0″	7′-6″	6′ 0″	4′-0″	.....
35′-0″ Radius	T	.....	11′-0″	20′-0″	28′-0″	34′-0″
	W	.....	13′-0″	8′-6″	6′-0″	5′-0″
40′-0″ Radius	T	.....	.....	.....	22′-0″	30′-0″
	W	.....	.....	.....	9′-0″	7′-0″
45′-0″ Radius	T	.....	.....	.....	.....	24′-0″
	W	.....	.....	.....	.....	9′-0″

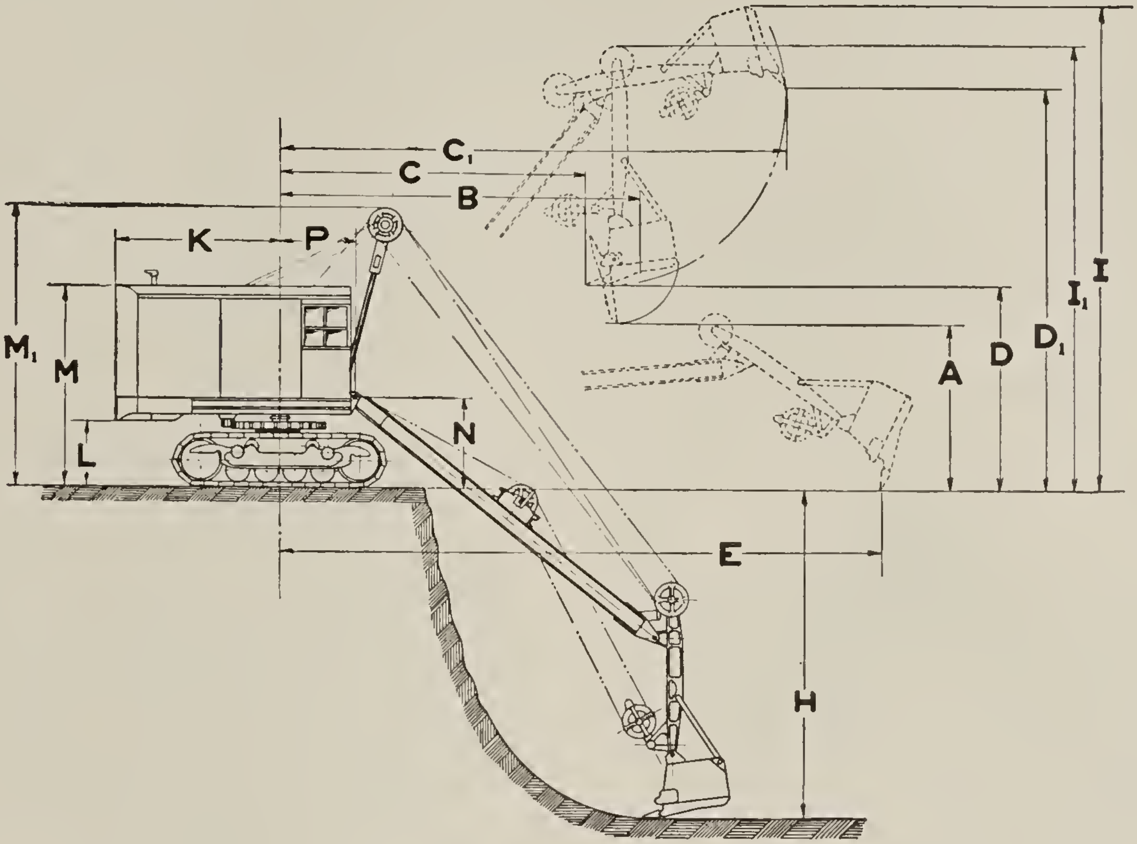
MAXIMUM STOCK PILE DIMENSIONS

Type Machine	A	1020 1030 D 2	1030 B-2 D-2 GA-2	41-B E-2 D-2	41-B E-2
Boom Length	30′-0″	35′-0″	40′-0″	45′-0″	50′-0″
A	14′-0″	17′-0″	20′-0″	22′-0″	25′-0″
S	40′-0″	47′-0″	50′-0″	55′-0″	60′-0″

CRANE WORKING LOADS—75% TIPPING

Radius—Feet.........	12	15	20	25	30	35	40	45	50
A, lbs................	14,000	10,200	6,900	5,100	4,000	....	....	....	....
B2, lbs................	20,000	20,000	14,000	10,400	8,100	6,600	5,500	....	....
41–B, lbs..	48,800	34,800	23,100	17,100	13,400	10,900	9,100	7,700	6,500
GA–2, lbs...........	....	25,500	17,100	12,700	10,000	8,100	6,800	5,700	....
1020, lbs..............	16,700	12,200	8,000	6,000	4,600	3,700	....	....	....
1030, lbs..............	20,000	18,700	12,600	9,350	7,300	5,950	4,950	....	....
D2, lbs................	29,900	21,500	14,450	10,700	8,400	6,800	5,650	4,725	....
E2, lbs................	46,600	32,600	21,700	16,000	12,500	10,200	8,500	7,200	6,100

Dimensions and Specifications are subject to slight change from time to time.
Write for latest bulletin and specifications on any of these machines.



BUCYRUS-ERIE 1020, 1030, B2, GA3, AND D2

Drag Shovel Working Range Dimensions

Type Machine	1020		1030		B2		GA2		D2	
Length of Boom Length of Handle	18′-0″ 7′-6″		21′-0″ 8′-6″		24′-0″ 8′-6″		24′-0″ 8′-6″		24′-0″ 8′-6″	
Capacity of Dipper—Cu. Yd.	½ or ⅝		¾ or ⅝		¾ or ⅝		¾ or 1		¾ or 1	
Type of Dipper	Front Opening	Solid	Front Opening	Solid	Front Opening	Solid	Front Opening	Solid	Front Opening	Solid
A—Clear Dumping Height—Max.	7′-0″	......	10′-0″	......	11′-0″	......	11′-0″	......	10′-3″	......
B—Dumping Reach—Minimum	15′-6″	......	16′-0″	......	19′-0″	......	19′-3″	......	19′-6″	......
C—Radius at Beginning of Dump	......	13′-0″	......	13′-0″	......	16′-0″	......	16′-6″	......	17′-0″
C1—Radius at End of Dump	......	24′-6″	......	25′-9″	......	29′-0″	......	29′-3″	......	30′-0″
D—Clearance Under Dipper—Beginning of Dump.	......	9′-6″	......	12′-6″	......	13′-6″	......	13′-6″	......	12′-9″
D1—Clearance Under Dipper—End of Dump	......	19′-6″	......	25′-3″	......	25′-0″	......	26′-6″	......	24′-6″
E—Digging Radius—Max.	28′-9″	28′-9″	33′-3″	33′-3″	36′-3″	36′-3″	37′-6″	37′-6″	36′-6″	36′-6″
H—Digging Depth—Max.	16′-0″	16′-0″	18′-0″	18′-0″	22′-0″	22′-0″	22′-0″	22′-0″	21′-0″	21′-0″
I—Clearance Over Dipper—Max.	......	23′-3″	......	28′-9″	......	29′-6″	......	30′-3″	......	29′-0″
I1—Clearance Over Sheaves at Max. Dump Height A or D1	20′-6″	20′-6″	25′-6″	25′-6″	26′-0″	26′-0″	26′-0″	26′-0″	26′-0″	26′-0″
M1—Clearance Height—Auxiliary A-Frame	13′-6″	13′-6″	15′-0″	15′-0″	17′-0″	17′-0″	17′-0″	17′-0″	17′-0″	17′-0″

The above dimensions for dumping positions are based on maximum dimension of A or D, and will vary with the dumping height at which the machine operates.

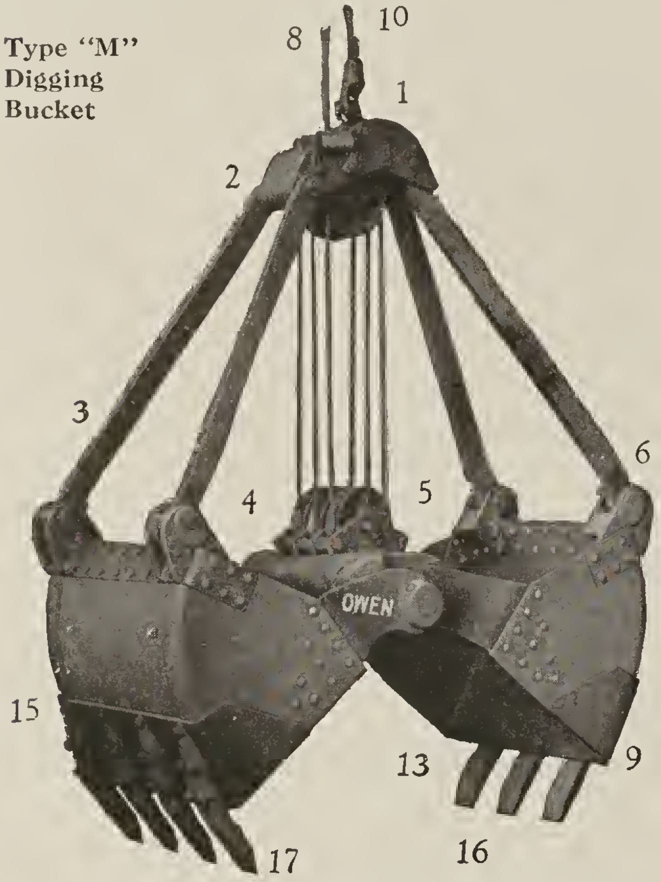
Dimensions and Specifications are subject to slight change from time to time. Write for latest bulletin and specifications on any of these machines.

OWEN CLAM SHELL BUCKETS

Products—Clam Shell Buckets of latest improved design and construction, providing increased digging and rehandling efficiency with low maintenance.

Types Manufactured—Owen Type "M" Buckets—for digging and general excavating and dredging purposes. Owen Type "K" Buckets for general rehandling purposes. Owen Type "D" Buckets for heavy work of very severe nature. Owen Type "S" Clean-up Bucket. Illustrated literature with complete information on any of above types sent on request.

Type "M"
Digging
Bucket



17 Owen Construction Features

1. One-Piece Steel Crosshead has fewer parts—eliminates top-heaviness—provides for rigid upper arm connections, holding the upper closing sheaves permanently in alignment with the bottom sheaves regardless of extent of wear. No bolts or rivets to become loose. All rack, wobble and side play eliminated.

2. No Wear in Upper Arm Ends—The inside arms are locked in the crosshead—the outside arms are fast to the upper arm pin which turns in a long bushing in the crosshead.

3. Heavy Forged Steel Arms with large, case-hardened steel bushings at lower ends, have sufficient spread at upper ends to hold crosshead in a fixed, rigid position, regardless of unequal stress or strains.

4. Adjustable, Undiminished Closing Power, ample for the hardest materials, is exerted by a six-part closing cable. Closing sheaves may be reeved with a five, four, or three part closing cable, with fair leads, to obtain the maximum closing speed consistent with digging efficiency.

5. Long Life Sheaves and Cable—Closing sheaves are mounted on main counterweight where they rarely come in contact with the material. Closing sheaves are held in upright position by hinge stops when open bucket is dropped into material. Closing cable has no side leads or "S" bends.

6. Lever Type Arm Brackets of electric-steel webbed construction increase the digging power by applying the downward thrust of the arm at points furthest from the center shaft. Less power is thus required to force the jaws into the material and greater digging efficiency is obtained. Arm brackets are exceptionally heavy, with large case-hardened steel lubricated arm pins, and tag line bolts. They have the additional feature of bringing the arm bearing clear of the material in the bucket.

7. Force Feed Alemite Lubrication is applied to Sheave Pins, Arm Pins and Center Shaft Bearings. One large grease compressor is furnished with each bucket.

8. Closing Cable is Protected against excessive wear due to chafing. Four large case-hardened steel guide rollers—the upper two rotating at right angles to the lower rollers—prevent chafing, regardless of angle when digging.

9. Heavy Shock-Resisting Renewable Lips, made of special alloy steel, provide a lasting foundation to which teeth are bolted. The ability of these lips to resist wear when handling abrasive material is unequalled.

10. Cable Clips Eliminated—Rapid reeving obtained with closing and holding line sockets which are furnished with each bucket.

11. Sealed Center Shaft Bearings—Heavy renewable washers of large diameter are fitted between the counter-bored faces of bushed hinges to provide grit-proof bearings for the lubricated Center Shaft. Outside hinges are pinned to shaft.

12. Greater Digging Power with No Dead Weight—This is due to proper distribution of weight, more than half of which is located on the center shaft where it directly counteracts the lifting tendency exerted by the upward pull of the closing line. This is "live" weight because it is completely utilized by the closing power in delivering great digging power equally to both jaws. Digging power can be increased to suit requirements by bolting on additional weight in the form of a jacket to the main counter-weight. This concentration of weight low in the construction enables the bucket to dig at sharp angles without toppling over.

13. Sharp Penetration and Clean Dumping is obtained, due to uniform thickness at bevelled cutting edges. There are no ledges or projections inside the jaws to offer resistance to compact or sticky material entering or leaving the bucket.

14. Dropping Shocks Absorbed, Eliminating Breakage—An exclusive method of stopping the jaws at a fixed open position is employed. When the open bucket is dropped, it permits the forcing of the teeth and lips into the material before the counterweight hits. The lug portion of each of the heavy electric-steel hinge castings engages the counterweight at four points of contact with sufficient "give" or slippage to absorb the dropping shock. This is one reason why Owen Buckets are guaranteed against breakage.

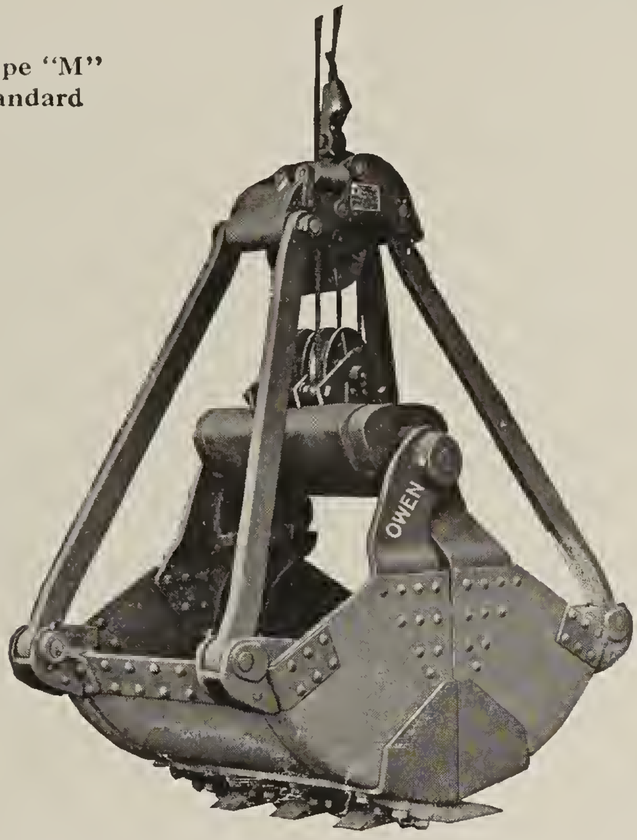
15. Less Rivets Are Required due to heavy flanged steel side plates which eliminate corner angles and provide a rigid construction with a minimum number of parts.

16. Heavy Duty High Carbon Drop Forged Steel Teeth with chisel point bevel and correct digging pitch. Special high carbon steel teeth bolts one inch in diameter have countersunk heads and key which seats through the thickness of the lip.

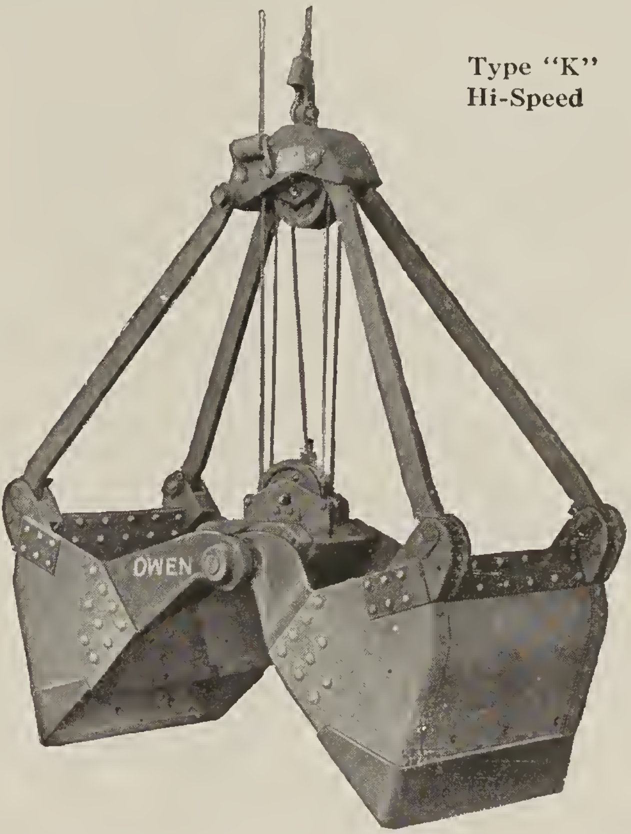
17. Lips and Teeth Points Hit First when the open bucket is dropped. Thus the entire weight of the bucket is utilized to force the teeth or cutting edges of the jaws into the material before the counterweight touches. Deep penetration is thus obtained before the closing power is applied. The result is a bigger grab.

OWEN CLAM SHELL BUCKETS

Type "M"
Standard



Type "K"
Hi-Speed



The Type "M" Owen Bucket comes in three models:

1. **Type "M" Standard**—For excavating and rehandling compact materials.
2. **Type "M" Special**—With full grit-proof lubricated construction—for excavating or dredging.
3. **Type "M" Narrow**—½ and ¾ cu. yd. capacities—especially suited for narrow trench work.

The Type "K" Owen Bucket comes in three models:

1. **Type "K" Standard**—For general rehandling purposes.
2. **Type "K" Special**—With full grit-proof lubricated construction for rehandling very gritty materials.
3. **Type "K" Hi-Speed**—With specially designed steep pitch bowl for exceptionally rapid rehandling of loose materials.

TYPE "M" BUCKETS—Ratings—Dimensions—Weights of Standard Sizes

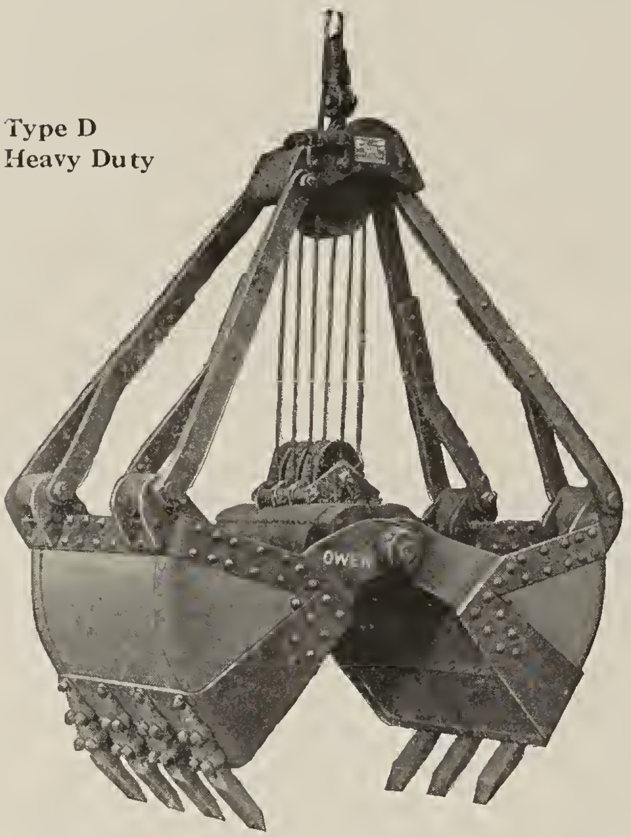
Size Number	23	26	126	30	130	230	36	136	236	146	246
RATINGS											
Rated Capacity—cu. yds.	¼ STD.	⅜ STD.	½ NAR.	½ STD.	⅝ STD.	¾ NAR.	¾ STD.	1 STD.	1¼ STD.	1½ STD.	2 STD.
Rated Capacity—cu. ft.	6¾	10⅛	13½	13½	16⅞	20¼	20¼	27	33¾	40½	54
Line of Plate Capacity—cu. ft.	7½	11	16	15½	18½	21	22¼	28⅜	34½	45	57
Overload Capacity—cu. ft.	9	12	19	20	22	25	26	34	39	53	65
DIMENSIONS											
Width—(W. O.)	2′ 1″	2′ 4″	2′ 4″	2 8″	2′ 8″	2′ 8″	3′ 2″	3′ 2″	3′ 2″	4′ 1″	4′ 1″
Height, Closed—(H. C.)	4′ 6″	4′ 10″	5′ 9″	5′ 9″	5′ 9″	6′ 0″	6′ 2″	6′ 10″	6′ 11″	7′ 8″	8′ 5″
Height, Open—(H. O.)	5′ 8″	6′ 1″	7′ 5″	7′ 4″	7′ 4″	7′ 9″	7′ 10″	8′ 7″	8′ 10″	9′ 5″	10′ 9″
Length, Closed—(L. C.)	4′ 2″	4′ 8″	5′ 10″	5′ 6″	5′ 9″	6′ 2″	5′ 10″	6′ 6″	7′ 1″	7′ 0″	7′ 9″
Length, Open—(L. O.)	5′ 0″	5′ 6″	6′ 3″	6′ 1″	6′ 3″	6′ 8″	6′ 4″	7′ 0″	7′ 7″	8′ 6″	9′ 4″
WEIGHTS											
Without Cwt. or Teeth	1280	1450	2200	2500	2600	2700	3450	3675	3850	5300	5600
Counterweight Jac.—Std.	185	250	200	250	250	250	400	400	400	550	550
Teeth (Bottom)	100	150	150	260	260	260	300	300	300	335	335

TYPE "K" REHANDLING BUCKETS—Ratings—Dimensions—Weights of Standard Sizes

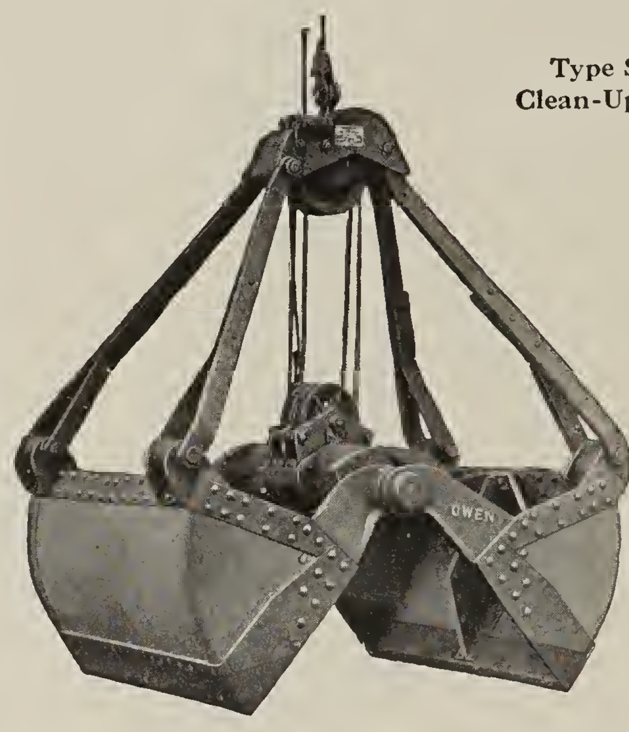
Size Number	31	33	133	36	136	40	140	148	248
RATINGS									
Rated Capacity—cu. yds.	½	⅝	¾ Light	¾ Heavy	1 Light	1 Heavy	1¼	1½	2
Rated Capacity—cu. ft.	13½	16⅞	20¼	20¼	27	27	33¾	40½	54
Line of Plate Capacity—cu. ft.	15	17½	21¼	21½	28½	29½	34¾	42½	56¾
Overload Capacity—cu. ft.	19	21	26	25	33	34	43	50	64
DIMENSIONS									
Width—(W. O.)	2′ 9″	2′ 11″	2′ 11″	3′ 2″	3′ 2″	3′ 6″	3′ 6″	4′ 2″	4′ 2″
Height, Closed—(H. C.)	5′ 1″	5′ 11″	6′ 2″	6′ 2″	6′ 6″	6′ 10″	7′ 0″	7′ 7″	7′ 11″
Height, Open—(H.O.)	6′ 3″	6′ 11″	7′ 5″	7′ 5″	7′ 11″	8′ 2″	8′ 6″	9′ 2″	9′ 9″
Length, Closed—(L. C.)	4′ 10″	5′ 1″	5′ 8″	5′ 6″	6′ 2″	6′ 1″	6′ 1″	6′ 7″	7′ 5″
Length, Open—(L. O.)	5′ 9″	6′ 10″	7′ 3″	7′ 1″	7′ 8″	7′ 6″	7′ 10″	8′ 2″	9′ 0″
WEIGHTS									
Without Counterweight	1575	2170	2330	2440	2615	3375	3550	3950	4200
Counterweight Jacket	225	250	250	275	275	375	375	none	none

OWEN CLAM SHELL BUCKETS

Type D
Heavy Duty



Type S
Clean-Up



Owen Type "D" Heavy Duty Buckets are designed for extra heavy digging in such materials as stiff clay, ore, broken rock, slag or shale—any work that subjects the bucket to severe strains. Three models are available: The Type "D" Standard, Type "D" Narrow and Type "D" Extra Heavy.

Owen Type "S" Buckets are efficient rehandlers for both loose and compact materials. They provide maximum output, and are especially recommended for clean-up work on barges and cars. Made in three models: Type "S" Standard, Type "S" Heavy and Type "S" Special.

TYPE "D" BUCKETS—Ratings—Dimensions—Weights of Standard Sizes

TYPE "D" HEAVY BUCKETS

Size Number	26	30	130	230	36	136	236	146	246
RATINGS									
Rated Capacity—cu. yds.	½ NAR.	½ STD.	⅝ STD.	¾ NAR.	¾ STD.	1 STD.	1¼STD.	1½STD.	2 STD.
Rated Capacity—cu. ft.	13½	13½	16⅞	20¼	20¼	27	33¾	40½	54
Line of Plate Capacity—cu. ft.	16	15½	18½	21	22¼	28⅜	34½	45	57
Overload Capacity—cu. ft.	19	20	22	25	26	34	39	53	65
DIMENSIONS									
Width, Outside—(W. O.)	2′ 4″	2′ 8″	2′ 8″	2′ 8″	3′ 2″	3′ 2″	3′ 2″	4′ 1″	4′ 1″
Height, Closed—(H. C.)	5′ 9″	5′ 9″	5′ 9″	6′ 0″	6′ 2″	6′ 10″	6′ 11″	7′ 10″	8′ 5″
Height, Open—(H. O.)	7′ 5″	7′ 4″	7′ 4″	7′ 9″	7′ 10″	8′ 7″	8′ 10″	9′ 7″	10′ 9″
Length, Closed—(L. C.)	5′ 10″	5′ 6″	5′ 9″	6′ 2″	5′ 10″	6′ 6″	7′ 1″	7′ 0″	7′ 9″
Length, Open—(L. O.)	6′ 3″	6′ 1″	6′ 3″	6′ 8″	6′ 4″	7′ 0″	7′ 7″	8′ 6″	9′ 4″
WEIGHTS									
Without Cwt. or Teeth	2300	2600	2700	2800	3700	3950	4100	6150	6490
Cwt. Jac.—Std	200	250	250	250	400	400	400	550	550
Teeth—(Bottom)	150	260	260	260	300	300	300	335	335

TYPE "D" EXTRA HEAVY BUCKETS

Sizes—¾, 1, 1¼, 1½, 2, 2½, and 3 cu. yds.

Larger sizes can be made to special order.

Write for information and data on Type "D" Extra Heavy Buckets.

TYPE "S" BUCKETS—Ratings—Dimensions—Weights of Standard Sizes

Size Number	048	48	160	260	360	460	172	272	372	178	278
RATINGS											
Nominal Rating—Cu. Yds.	¾	1	1¼	1½	1¾	2	2	2½	3	3½	4
Water Level Cap.—Cu. Ft.	20¼	27	33¾	40½	47¼	54	54	67½	81	94½	108
Line of Plate Cap.—Cu. Ft.	24	32	40	48	56	64	64	80	95	110	128
Overload Cap.—Cu. Ft.	33	44	54	61	68	81	84	95	115	142	148
Cleanup Area—Sq. Ft.	28	29	37	43	45	48	54	57	60	71	76
DIMENSIONS											
Width Outside—(W. O.)	4′ 2″	4′ 2″	5′ 2″	5′ 2″	5′ 2″	5′ 2″	6′ 2″	6′ 2″	6′ 2″	6′ 8″	6′ 8″
Height Closed—(H. C.)	6′ 7″	7′ 1″	7′ 1″	8′ 1″	8′ 8″	8′ 11″	9′ 0″	9′ 6″	9′ 11″	10′ 1″	10′ 6″
Height Open—(H. O.)	7′ 9″	8′ 5″	8′ 5″	9′ 0″	9′ 9″	10′ 0″	10′ 8″	11′ 1″	11′ 6″	11′ 10″	12′ 5″
Length Closed—(L. C.)	5′ 6″	6′ 1″	6′ 1″	6′ 5″	6′ 11″	7′ 5″	7′ 3″	7′ 5″	8′ 3″	8′ 3″	9′ 0″
Length Open—(L. O.)	7′ 0″	7′ 4″	7′ 4″	8′ 6″	9′ 0″	9′ 6″	9′ 0″	9′ 6″	10′ 0″	10′ 9″	11′ 6″
WEIGHTS	3380	3900	4750	4900	5250	5600	7000	7250	7800	12000	13000

OWEN CLAM SHELL BUCKETS

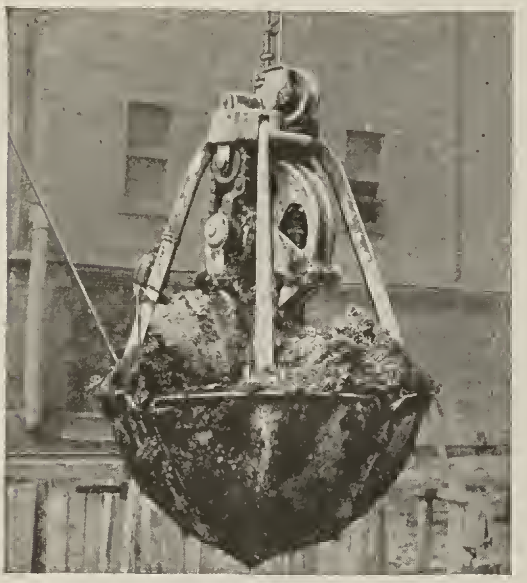
IN OPERATION ON THE JOB

"Owen Buckets properly installed and operated are guaranteed to do a bigger day's work than any other bucket of the same weight and capacity." This is your insurance of absolute satisfaction. Owen Buckets on the job, make this guarantee positive.

Write for illustrated descriptive folders on the Type Owen in which you are especially interested. Apply to nearest Distributors for Net Prices.

The Owen Bucket Co.,
Cleveland, Ohio

HAYWARD STANDARD ORANGE PEEL BUCKET



Hayward Multi-Power Orange Peel Bucket excavating in clay and mire, carrying an over capacity load.

This bucket may be rightly termed an all round contractors' bucket. It is used principally for sewer work, in gravel banks, removing overburden, dredging, excavating and rehandling material generally.

It is a power wheel bucket of the two line type, one line being used for closing and digging, the other for holding the bucket while it is opening and discharging. It may be operated by almost any type of machine equipped with a double drum engine, or with a single drum engine and a Hayward Counterweight Drum.

Hayward Extra Heavy Standard Orange Peel Bucket

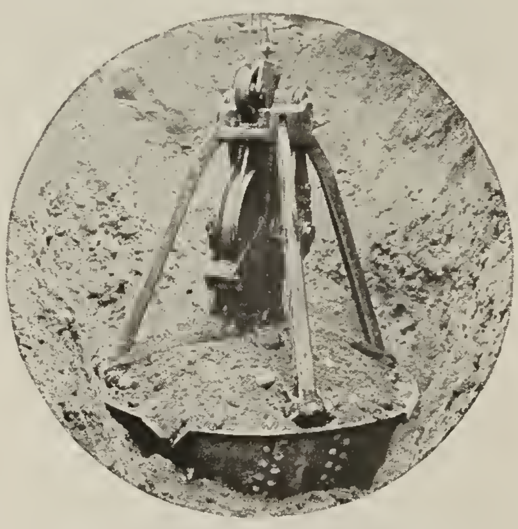
This bucket is built on the same general lines as the Standard, but is made much heavier in every part.

It has the strength to pitch in and make easy work of such tough assignments as canal digging, where there is old rip rap to be removed, piles and stumps to be pulled, cylinders to be sunk.

Hayward Multi-Power Orange Peel Bucket

This bucket, fitted with a two-part side chain has approximately sixty per cent more closing power. The power wheel is of sufficient width in the score to accommodate the additional amount of closing line required.

A Hayward Multi-Power Bucket is the bucket for the very hardest digging jobs, such as work in clay, and hard pan.



A Hayward Standard Orange Peel Bucket in contracting work combines digging power and an ability to grab big loads time and time again.

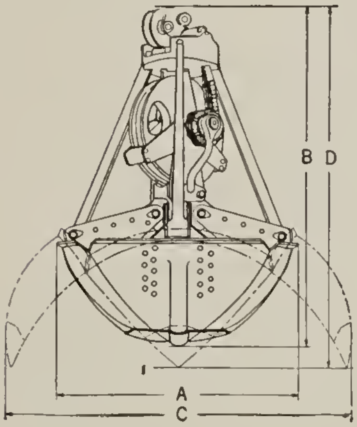
There is a type and size of Hayward Bucket that will dig any material any make of bucket will dig—from mud to blasted rock and hard pan — and —

There is also a type and size of Hayward Bucket that can be used on most any type operating machine without changes to present equipment.

This Hayward Extra Heavy Standard Orange Peel Bucket digs compact soil formations, handles rock and does work which demands great strength.

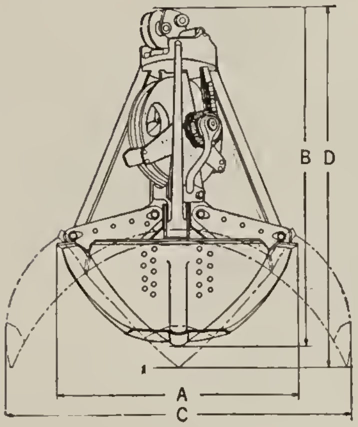
The Hayward Extra Heavy Standard Orange Peel Bucket is more than a match for the wide variety of hard material encountered.

Hayward Standard Orange Peel Buckets

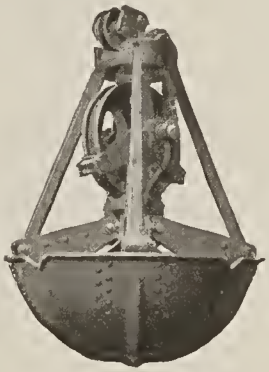


Capacity	Approx. Weight in Lbs.	Closed				Open			
		A Diam. Ft.	In.	B Height Ft.	In.	C Diam. Ft.	In.	D Height Ft.	In.
2 cu. ft.	500	2	2	3	7	2	9	4	0
2½ cu. ft.	550	2	7	3	10	3	2	4	4
4 cu. ft.	950	3	0	4	8	3	9	5	2
5 cu. ft.	1000	3	2	4	9	3	11	5	3
7 cu. ft.	1100	3	6	5	0	4	3	5	7
9 cu. ft.	1200	3	10	5	2	4	7	5	10
12 cu. ft.	2200	4	3	6	4	5	2	7	0
15 cu. ft.	2350	4	7	6	6	5	6	7	4
21 cu. ft.	4000	5	1	7	8	6	3	8	6
1 cu. yd.	4400	5	8	8	0	6	10	9	0
1¼ cu. yd.	4800	6	0	8	3	7	3	9	3
s1½ cu. yd.	5350	6	4	8	5	7	8	9	6
1½ cu. yd.	7750	6	4	9	6	7	10	10	6

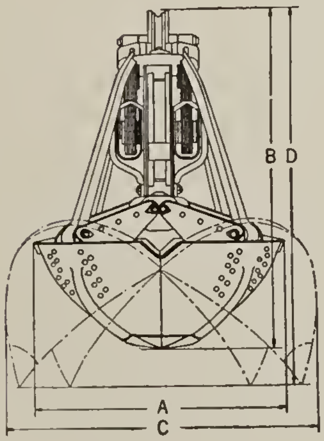
Hayward Extra Heavy Standard Orange Peel Buckets



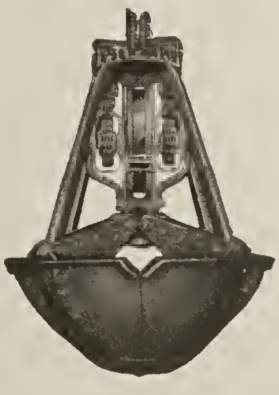
Capacity	Approx. Weight in Lbs.	Closed				Open			
		A Diam. Ft.	In.	B Height Ft.	In.	C Diam. Ft.	In.	D Height Ft.	In.
12 cu. ft.	2600	4	3	6	4	5	2	7	0
15 cu. ft.	2800	4	7	6	6	5	6	7	4
21 cu. ft.	4450	5	1	7	8	6	3	8	6
1 cu. yd.	4700	5	8	8	0	6	10	9	0
1¼ cu. yd.	5000	6	0	8	3	7	3	9	3
1½ cu. yd.	8500	6	4	9	6	7	10	10	6
2 cu. yd.	9500	7	0	10	0	8	6	11	3
2½ cu. yd.	10500	7	8	10	3	9	3	11	8
3 cu. yd.	11500	8	0	10	6	9	7	12	0



Hayward Multi-Power Orange Peel Buckets



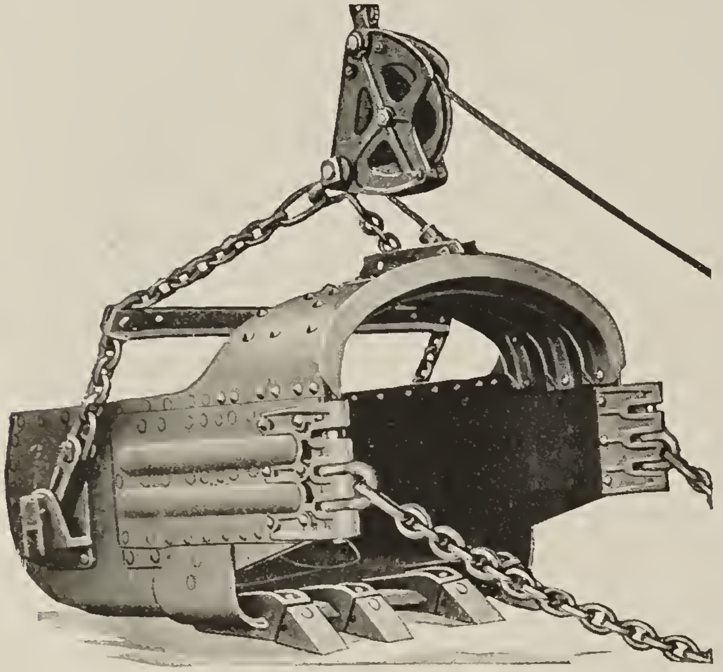
Capacity	Approx. Weight in Lbs.	Closed				Open			
		A Diam. Ft.	In.	B Height Ft.	In.	C Diam. Ft.	In.	D Height Ft.	In.
2 cu. ft.	700	2	2	3	7	2	9	4	0
2½ cu. ft.	750	2	7	3	10	3	2	4	4
4 cu. ft.	1100	3	0	4	8	3	9	5	2
5 cu. ft.	1200	3	2	4	9	4	0	5	3
7 cu. ft.	1300	3	6	5	0	4	4	5	7
9 cu. ft.	1400	3	10	5	2	4	8	5	10
12 cu. ft.	3000	4	3	6	4	5	3	7	0
15 cu. ft.	3200	4	7	6	6	5	7	7	4
21 cu. ft.	5200	5	1	7	8	6	4	8	6
1 cu. yd.	5600	5	8	8	0	7	0	9	0
1¼ cu. yd.	6200	6	0	8	3	7	5	9	3
1½ cu. yd.	10000	6	4	9	6	8	0	10	6



All prices f.o.b. Chicago and include buckets complete with all fittings.

Class "M" Designed for Light Excavation

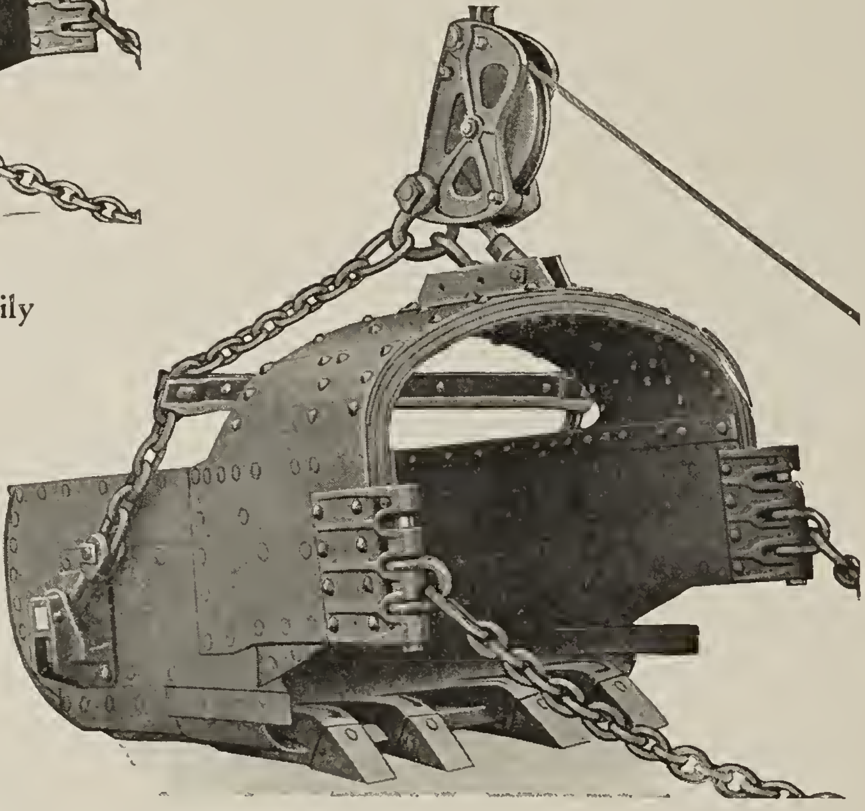
Rated cap. in cu. yds.	Struck meas. cu. ft.	Weight with teeth	Price inc. teeth
⅜	13 ft.	1100 ℔	$275.00
½	17 ft.	1525 ℔	300.00
¾	25 ft.	1980 ℔	400.00
1	34 ft.	3040 ℔	560.00
1¼	42 ft.	3250 ℔	590.00
1½	50 ft.	4000 ℔	745.00
2	67 ft.	5000 ℔	960.00

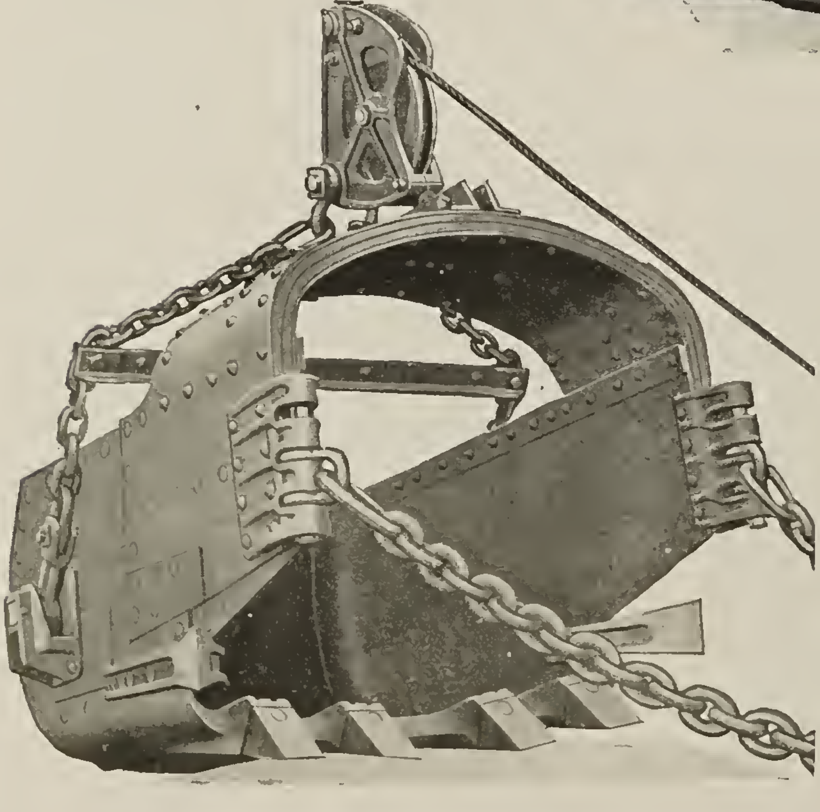


Class "S" Designed for Material Easily Plowed by Four Horses

Side teeth shown come as an extra.

Rated cap. in cu. yds.	Struck meas. cu. ft.	Weight with teeth	Price inc. teeth
1	34 ft.	3300 ℔	$610.00
1¼	42 ft.	3700 ℔	670.00
1½	50 ft.	4150 ℔	780.00
2	67 ft.	5350 ℔	1040.00
2½	83 ft.	6400 ℔	1260.00
3	98 ft.	7330 ℔	1440.00
3½	114 ft.	7700 ℔	1560.00

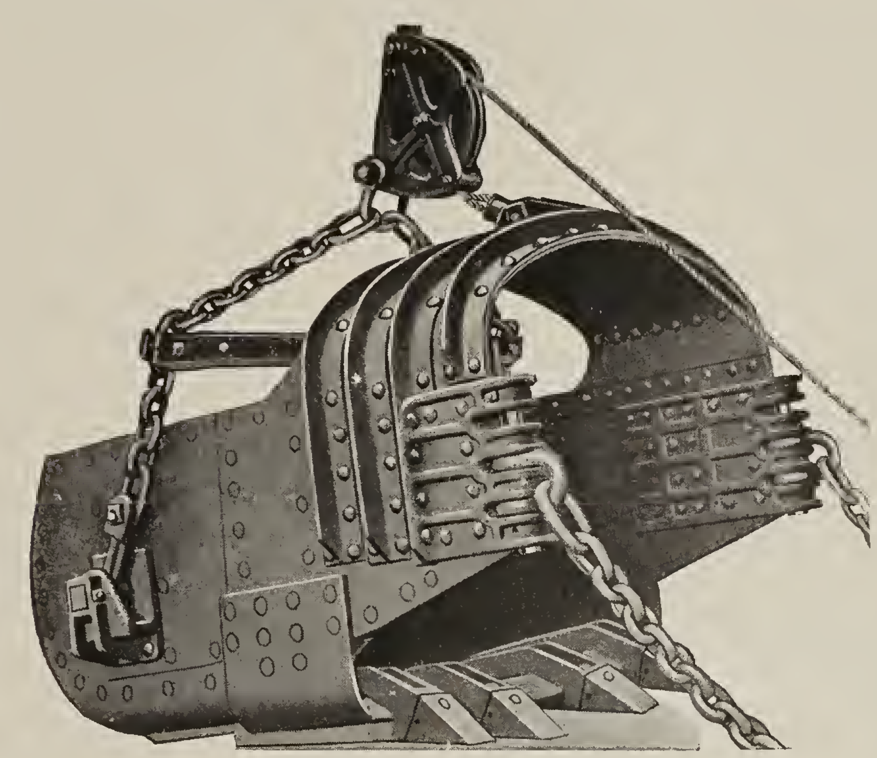




Class "C" General Purpose Bucket

Side teeth shown come as an extra.

Rated cap. in cu. yds.	Struck meas. cu. ft.	Weight with teeth	Price inc. teeth
½	17 ft.	1650 ℔	$350.00
¾	25 ft.	2425 ℔	450.00
1	34 ft.	3460 ℔	650.00
1¼	42 ft.	3800 ℔	700.00
1½	50 ft.	4540 ℔	860.00
2	67 ft.	5630 ℔	1120.00
2½	83 ft.	7430 ℔	1460.00
3	98 ft.	8220 ℔	1640.00
3½	114 ft.	9040 ℔	1800.00
4	129 ft.	10000 ℔	1960.00
4½	144 ft.	10750 ℔	2200.00
5	159 ft.	11775 ℔	2400.00
6	188 ft.	14850 ℔	3000.00
7	217 ft.	19500 ℔	3600.00



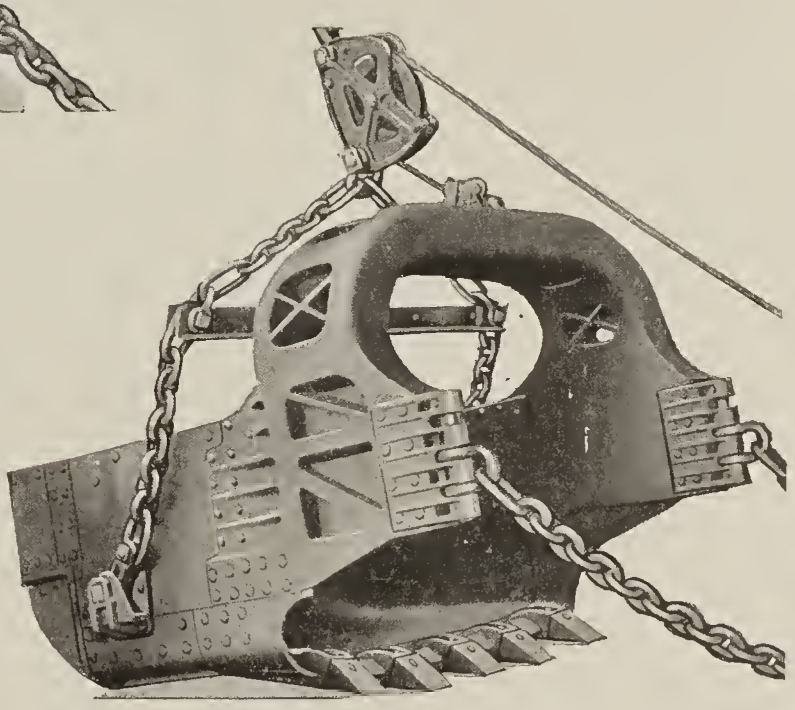
Class "H" Bucket for Handling Blasted Rock

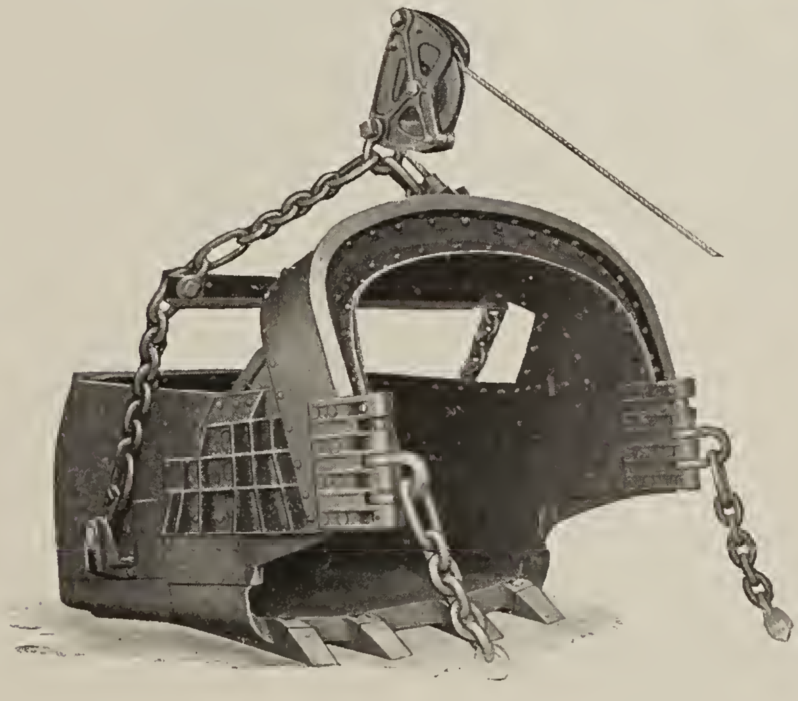
Rated cap. in cu. yds.	Struck meas. cu. ft.	Weight with teeth	Price inc. teeth
¾	25 ft.	2600 ℔	$570.00
1	34 ft.	4000 ℔	870.00
1¼	42 ft.	4440 ℔	1000.00
1½	50 ft.	5500 ℔	1200.00
2	67 ft.	6400 ℔	1400.00
2½	83 ft.	8560 ℔	1850.00
3	98 ft.	9500 ℔	2000.00
3½	114 ft.	10400 ℔	2100.00
4	129 ft.	11850 ℔	2400.00
4½	144 ft.	12400 ℔	2500.00

Class "J" Bucket Built in Sizes from Four Cubic Yards and Up

Rated cap. in cu. yds.	Struck meas. cu. ft.	Weight with teeth	Price inc. teeth
4	129 ft.	12000 ℔	$2800.00
4½	144 ft.	13000 ℔	3000.00
5	159 ft.	13500 ℔	3200.00
6	188 ft.	14500 ℔	3500.00
7	217 ft.	18000 ℔	4250.00
8	246 ft.	20000 ℔	4820.00
10	302 ft.	24000 ℔	5300.00

The purpose of the Class "J" design is to supply a large size, sturdy bucket of minimum weight. It is recommended for coal stripping and phosphate mining operations.



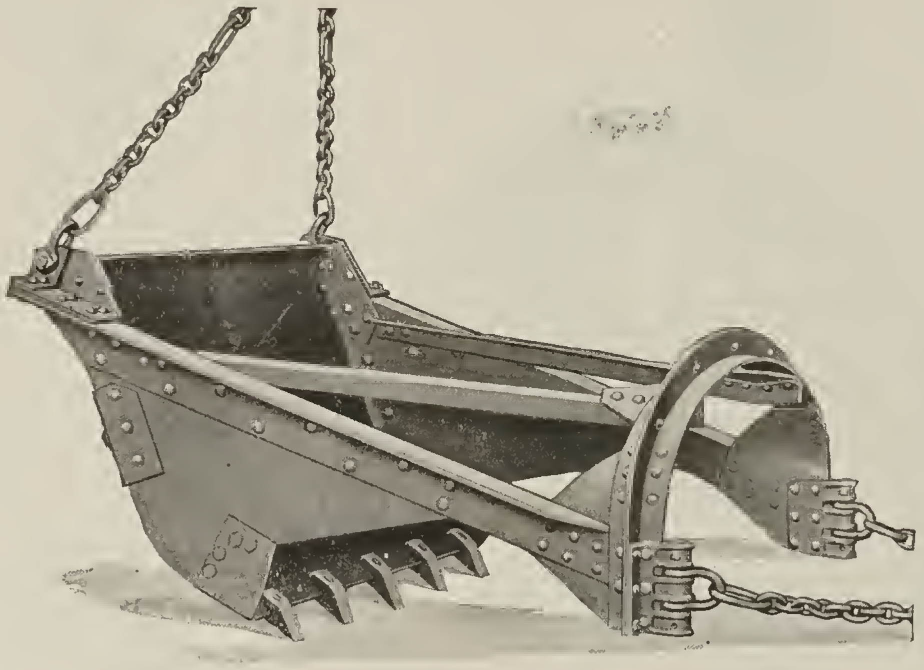


Class "V" Bucket

Rated cap. in cu. yds.	Struck meas. cu. ft.	Weight with teeth	Price inc. teeth
2½	83 ft.	6600 ℔	$1335.00
3	98 ft.	7000 ℔	1475.00
3½	114 ft.	7500 ℔	1575.00
4	129 ft.	8100 ℔	1700.00
4½	144 ft.	8900 ℔	1875.00
5	159 ft.	9800 ℔	2075.00
5½	174 ft.	10800 ℔	2275.00
6	188 ft.	12000 ℔	2500.00
6½	203 ft.	13200 ℔	2750.00
7	217 ft.	14500 ℔	3000.00

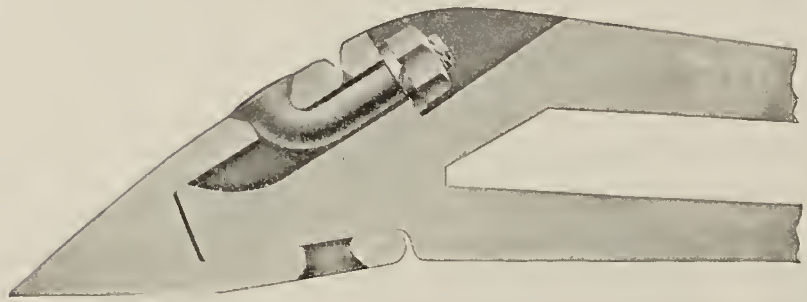
The purpose of the Class "V" design is to supply a large size, serviceable bucket of minimum weight capable of handling such material as is found in levee building and similar work.

PAGE DRAG SLIP SUITABLE FOR ALL MAKES OF MACHINES FOR BACK-FILLING



Style No.	For Machine Having Dragline Capacity of	Length from Hitch Plate to Hoist Socket	Width Overall	Weight	Price
½	½ cu. yd.	5′ 0″	5′ 0″	1400 ℔	$250.00
1	¾ to 1 cu. yd.	6′ 0″	6′ 0″	2100 ℔	370.00
1½	1 to 1¼ cu. yds.	6′ 0″	7′ 0″	2400 ℔	440.00
2	1¼ to 1½ cu. yds.	7′ 0″	8′ 0″	3100 ℔	570.00

Page Patented Tooth Point



Standard equipment on all Page Buckets.

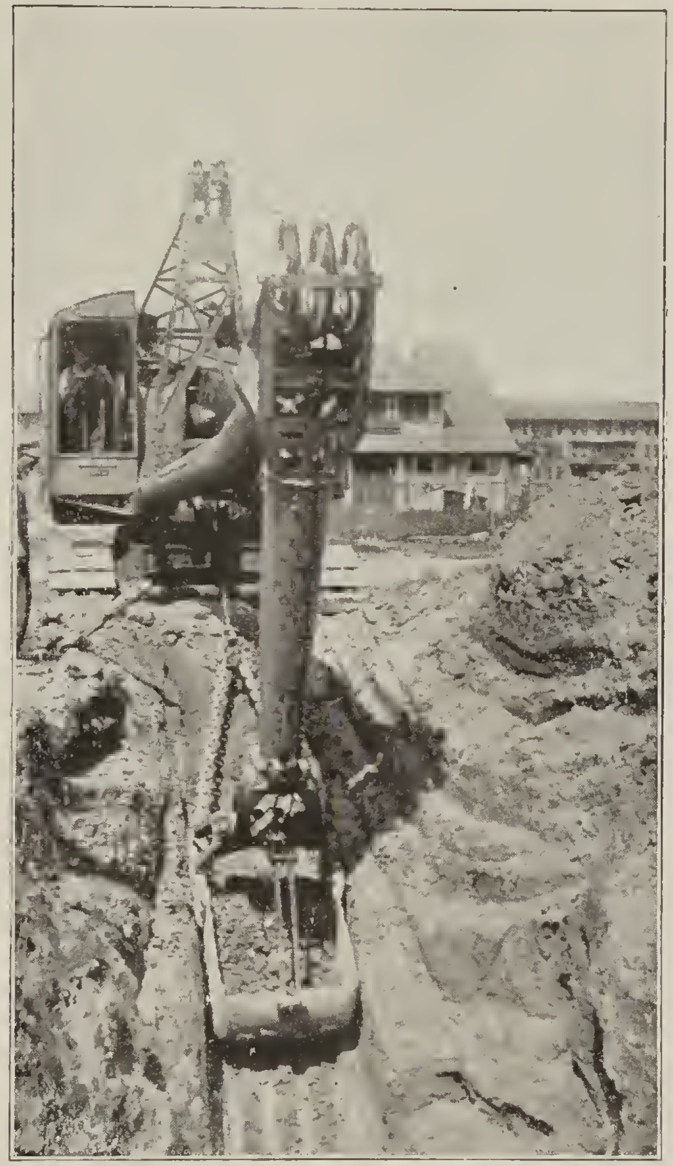
Page Patented Hump Dump Sheave

Standard on all Page Buckets unless otherwise ordered. (We have round sheaves to fit all our Hump Sheave frames.)

PAGE ENGINEERING COMPANY

CHICAGO, ILLINOIS

Page Scraper Buckets
and
Page Drag Shovels



Page Drag Shovel Attachment cutting deep sewer trench in hard material.

PAGE ENGINEERING COMPANY
844 Rush Street
CHICAGO, ILLINOIS

The GARST Power PLOW Scraper

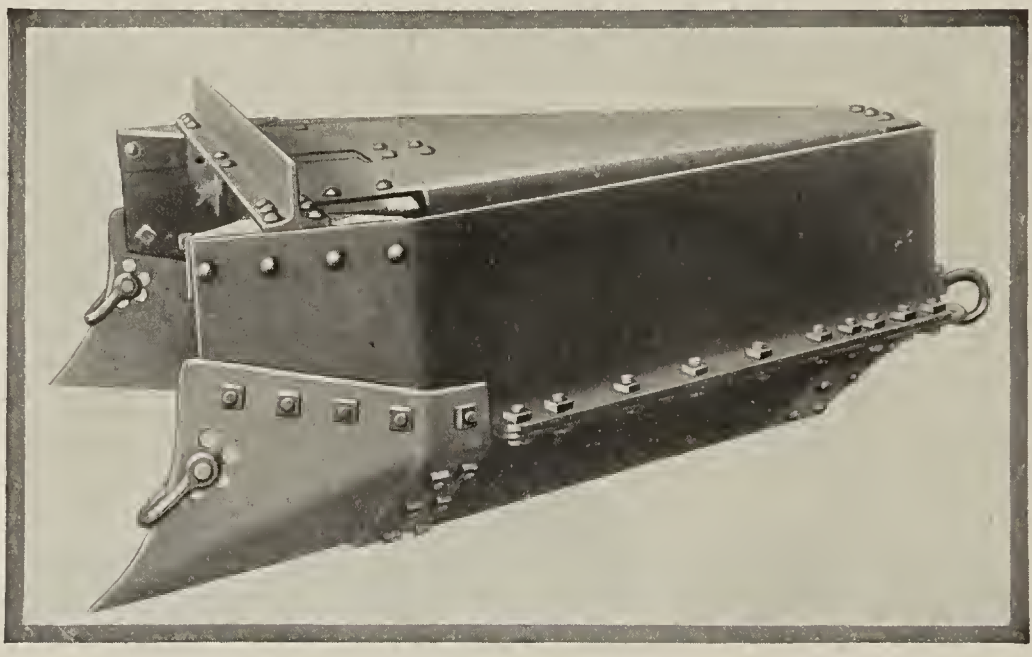
GARST MANUFACTURING CO.
549 W. Randolph St., Chicago, Ill.

LESS LINE PULL

Added Capacity with the Same Power Unit or the Same Capacity with Less Power

SOME OF THE USES

- General excavating of dirt, sand and gravel.
- Stripping deposits of sand and gravel, etc.
- Storing bulk material such as coal, sand, fertilizer, etc. and reclaiming the same.
- Levee and dam construction.
- Road excavation for short hauls.
- Underwater excavation.
- Levelling uneven ground.
- Backfilling.



Built on 4000-Year Old Plow Principle

Because the plow cuts the earth on a shear, it encounters minimum resistance.

The Garst Power PLOW Scraper is an application of this 4000 year old tested plow principle. It has been utilized to produce a scraper which gives added capacity with less line pull and consequently, lower production cost.

Exclusive Features

1 Cutting edge, or Plow Share, extends in a straight line the full length of the scraper. All material entering front of scraper is thus cut by same shearing angle.

2 Front ends of cutting edges are parallel to each other and line of pull and act as a rudder in keeping scraper moving in a straight line.

3 Digs only until loaded, then rides on the surface with minimum pull. Does not dig entire pull.

4 Operates as efficiently under water as in dry excavations. Lid prevents material from washing out.

5 Adjustable top permits 50% variation in size of load. Load may be increased or decreased as conditions require.

6 Plow Share points eliminate the use of teeth in all but the hardest packed materials.

Based on 4000 Year Old "PLOW" Principle Garst POWER PLOW SCRAPER

The GARST Power PLOW Scraper

GARST MANUFACTURING CO.
549 W. Randolph St., Chicago, Ill.

Digs—Conveys—Dumps the Load—All in One Operation

WHILE digging, the Plow-Share nose of the Garst Power PLOW Scraper is below the surface. The cutting edge, which is set at 26° to the line of pull, gives highly efficient shearing cutting action.

The lid of the scraper causes the digging to cease when it is fully loaded, and raises the loaded scraper to the surface. This gives positive control to the load and prevents it from flowing over the back of the scraper.

The Power PLOW Scraper automatically dumps its load when being pulled back. The angle of the cutting edge is 45° to the horizontal, thus assuring all the material being dumped.

Built for Hard Use and Long Life

The Power PLOW Scraper is strongly constructed of steel. All the most important parts and those subjected to especially hard wear are made of special steel, strongly jointed and reinforced.

The plow points and all other wearing parts are bolted on to the main part of the scraper by a flanged joint. This allows the removal of the wearing parts without removing rivets. It also keeps the bolts from the inside wearing surface.

Effects Large Economies

The Garst Power PLOW Scraper makes possible a large output of material by one or two men. It moves material distances up to 400 ft. without changing the point of delivery. It reduces to a minimum the amount of dead weight that is carried with each load of material handled and it gives greatly increased capacity with the same power unit.

The live load or material handled with a Garst Power Plow Scraper always exceeds dead load, or equipment handling it. This relation is not duplicated by other excavating devices.

At work under water. Lid prevents material from washing out.

Made in various capacities to meet all requirements

½ cu. yd.
⅝ " "
¾ " "
1 " "
1¼ " "
1½ cu. yd.
2 " "
3 " "
4 " "
5 " " and larger

Covered by U. S. Letters of Patent No. 1,399,382 1,430,075—1,524,096.

Garst POWER PLOW SCRAPER Based on 4000 Year Old "PLOW" Principle

Austin Trench Excavators and Backfillers

FOR

SEWER, WATER, GAS, OIL AND TELEPHONE CONDUIT TRENCH

Austin "Little Wonder" Public Service Ditcher

Present day excavation work requires speed and economical handling. To obtain this, most dependable machinery must be employed. This machinery must be adapted to a wide range of conditions in order to be productive.

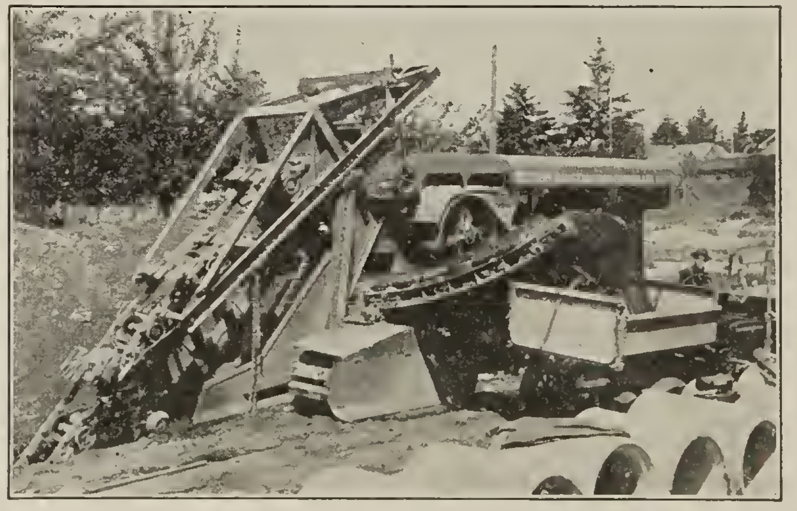
Austin has analyzed the contractors requirements and produced trench excavating machinery that is superior in many ways.

Austin design is simple and well balanced—power is conserved by using the smallest number of gear contacts and chain drives—power applied more direct, therefore, more power is available for traction and for digging—there are more safety factors that prevent damage to the machinery—there are Patented features, no other manufacturer can supply, which provide greater efficiency—the materials used in construction are of better quality and greater strength—the workmanship is unmatched.

Contractors equipped with Austin machines have a feeling of security. They know their machines will dig any formation classed as earth excavation, also shale rock—do it economically and with greater speed. In wet, sticky soil these Austins will out-dig any other machines, for the Patented Spring Type Bucket Cleaner supplied insures clean buckets, therefore, greater yardage.

If you have an Austin, you have the last word in trench excavating equipment. Your bid price is safe and your profits will be greater, because Austin dependability is built in—this insures low operating and maintenance cost.

Table of Trench Machine sizes shown on back of page.



Austin Model 410 Trench Excavator

Austin Trench Excavators

ARE BUILT IN NINE PRACTICAL SIZES

Model	Digging Widths	Digging Depths
100	16″, 18″, 22″, 26″ or 22″, 26″, 30″, 38″	4′0″, 6′0″, 8′0″
105	16″, 18″, 22″, 26″ or 22″, 26″, 30″, 38″, 42″	6′0″, 8′0″, 10′0″
110	22″, 26″, 30″, or 30″, 34″, 38″	8′0″, 10′0″, 12′0″
400	20″, 24″, 28″, 32″, 36″ or 28″, 32″, 36″, 40″	9′0″, 12′0″, 15′0″
500	28″, 32″, 36″, 40″, 44″ or 40″, 44″, 48″, 52″	15′0″, 18′0″
600	28″, 32″, 36″, 40″, 44″ or 40″, 44″, 48″, 52″	15′0″, 18′0″, 21′0″
700	28″, 32″, 36″, 40″, 44″ or 40″, 44″, 48″, 52″, 60″	15′0″, 18′0″, 21′0″
800	52″, 58″, 66″, 72″	15′0″, 18′0″, 21′0″
900	70½″ to 92″	12′0″ to 15′0″

Austin "Improved" Utility Backfiller

Clamshell Bucket

Bucket is light type design for use with double line. Use of bucket is limited to handling of loose materials and not recommended for hard digging. Capacity is three-eighths cubic yard.

Austin "Improved" Utility Backfiller for

- Unloading pipe from cars
- Lowering pipe into trench
- Pulling sheeting after pipe is set
- Hoisting excavated soil from manholes
- Lowering material for manhole construction
- Hoisting excavated soil from sewer tunnels
- Handling forms for brick and segment tile sewer
- Loading and unloading materials for trucking
- Pile driving and building wrecking
- Loading and unloading loose materials for stock piles
- General clean-up work on trench jobs.
- Backfilling of trenches or spreading of loose soil

The Austin Backfiller, through its adaptability to many uses on a trench job, has proved to be highly economical and productive. It is fast in operation and has the mobility of a tractor.

In design, its simplicity is outstanding—all machinery is mounted on the top side of the frame and easily accessible. Heavy duty parts of unusually high quality materials are used in construction.

Power unit is the largest most powerful supplied for this type of equipment. Boom is telescopic type, 30 feet in length and can be reduced to 25 feet in length.

Pushfiller Boom and Scraper

Pushfiller attachment is for use in confined spaces and where it is not possible to refill the ditch from the side of the trench opposite the spoil bank. Pushfiller requires an additional boom and carrier.

Crane Capacities

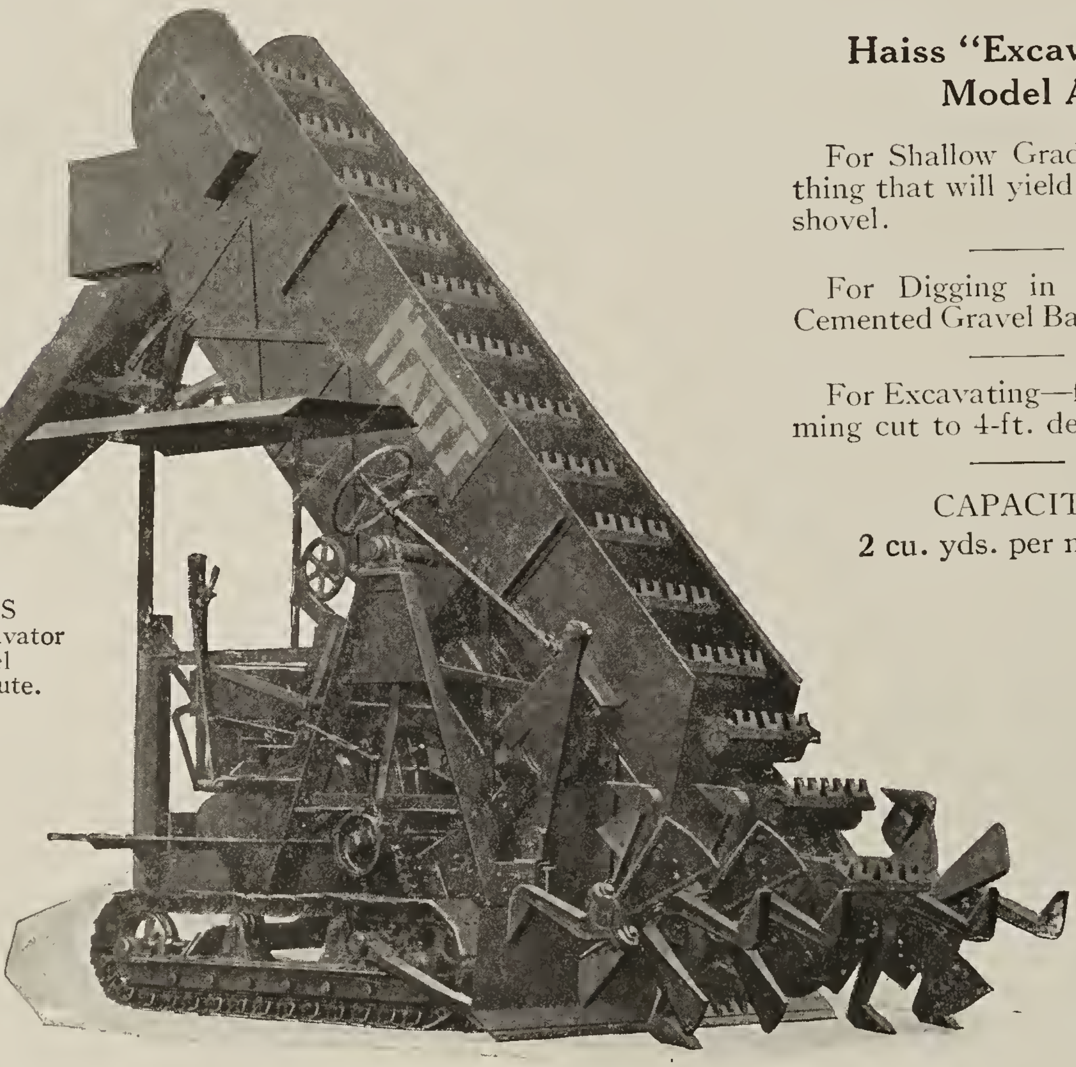
LOAD LIFT
2900 # at 12′0″ Radius
2650 # at 13′0″ Radius
2400 # at 14′0″ Radius
2200 # at 15′0″ Radius
2000 # at 16′0″ Radius
1800 # at 17′0″ Radius
1600 # at 18′0″ Radius

HAISS "EXCAVATOR"

Manufactured by

GEORGE HAISS MANUFACTURING CO., INC.

NEW YORK



The HAISS Model A Excavator with swivel discharge chute.

Haiss "Excavator" Model A

For Shallow Grading in anything that will yield to pick and shovel.

For Digging in Heavy and Cemented Gravel Banks.

For Excavating—from a skimming cut to 4-ft. depth.

CAPACITY
2 cu. yds. per minute.

The road to profit is by way of being keen to use new machines and new methods to *cut the cost of doing work.* You will recognize, in the *new* HAISS EXCAVATOR, that here is an economical and efficient tool for a great variety of work—work that would otherwise tie up a much more expensive machine.

The HAISS EXCAVATOR will dig (without plowing) and load any earth, clay, or natural soil that can be picked loose by a man with a hand pick and then shoveled.

On 15 to 20 inch cut, this machine will excavate and load 1½ *to 2 yards per minute.*

It has been establishing performance records on a variety of difficult tasks, and has demonstrated its complete reliability, even in unusual and exacting service.

Consider these facts about the HAISS EXCAVATOR

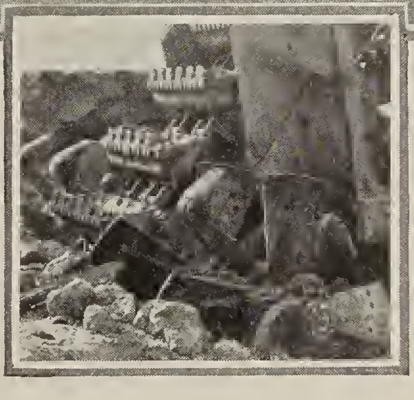
1. It digs without plowing.
2. It digs and loads *continuously.*
3. It makes a cut 8 ft. wide in a single pass.
4. It will dig from a skimming cut to one 4 ft. deep (or in a bank where the material will avalanche.)
5. It will work in close quarters, since there is no turntable swing.
6. With conveyor discharge (see page 3) it requires only 13 feet headroom.
7. It has ample power, is mechanically dependable, and ruggedly built, from manganese steel picks-and-paddles to boiler plate discharge spout.
8. It has, back of it, the thirty-five years of HAISS experience and reputation.

On the following pages are shown a selection of typical jobs, with a short story of the work done. The men who are using HAISS EXCAVATORS are enthusiastic in their praise of the machine's ability to make money for them. *And that is what counts!*

The Haiss Excavator Has Earned a Reputation

(At the right)—Grading streets for paving without plowing or scarifying.

(Below)—46,340 yards of clay street surface excavated into dump wagons at Saskatoon in one season.



A close-up of the picks and paddles digging in a 4 ft. bank.

Starting to excavate an underpass through a railroad embankment where the machine worked between trestle bents and a turntable machine could not have been used. The same advantages apply in grading alleys,

Typical shallow grading where the Excavator's ability to hold to a line keeps the work progressing without interruption.

When you are weighing the advantages of the HAISS EXCAVATOR for a particular job, don't lose sight of the fact that it is *a tool of flexible application.* You can keep it busy. There's always light excavating work—profitable to do, and the kind that keeps your trucks busy without battering them to pieces. Think of the HAISS EXCAVATOR in terms of:

Making sub-grade cuts.

Digging top soil.

Getting out bank gravel.

Street subway excavation.

Loading old macadam.

Grading alleys.

Opening sub-division streets.

Digging in a clay pit.

Taking up track ballast.

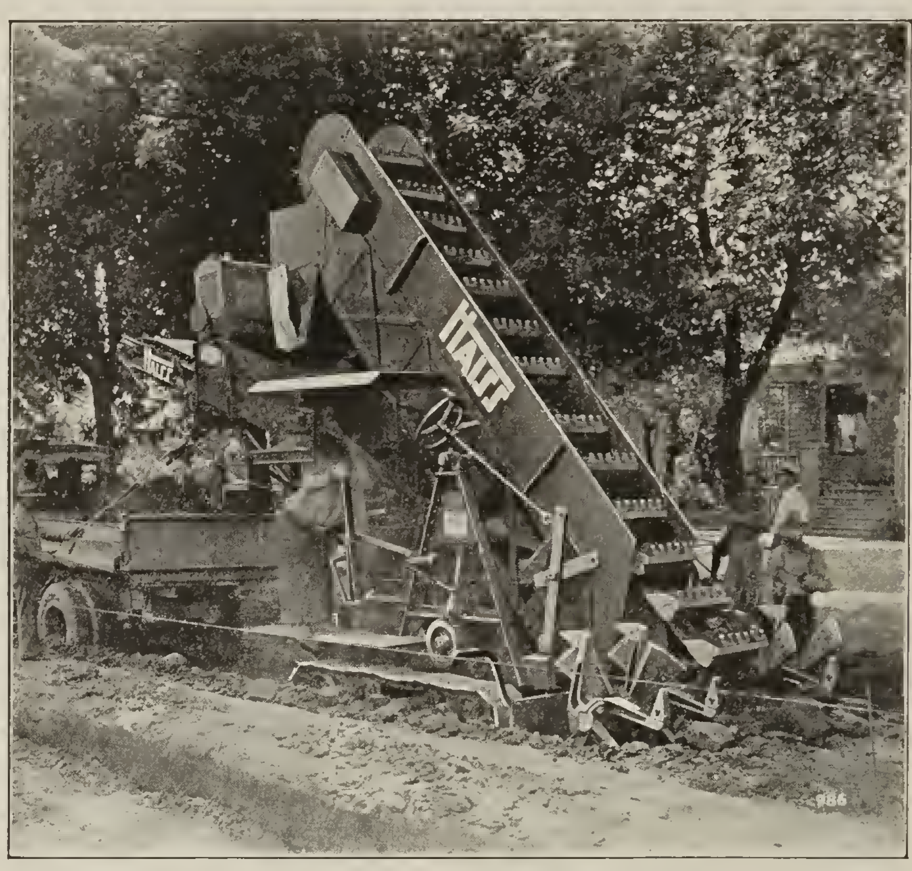
General light excavation.

Curb and gutter grading.

Stripping quarry over-burden.

Grading at airports.

Excavating in narrow quarters (under trestles, between walls, indoors, etc.)



Notice how the patented picks and propellers dig in loosening the spoil on this pavement widening job.

Essential Details:

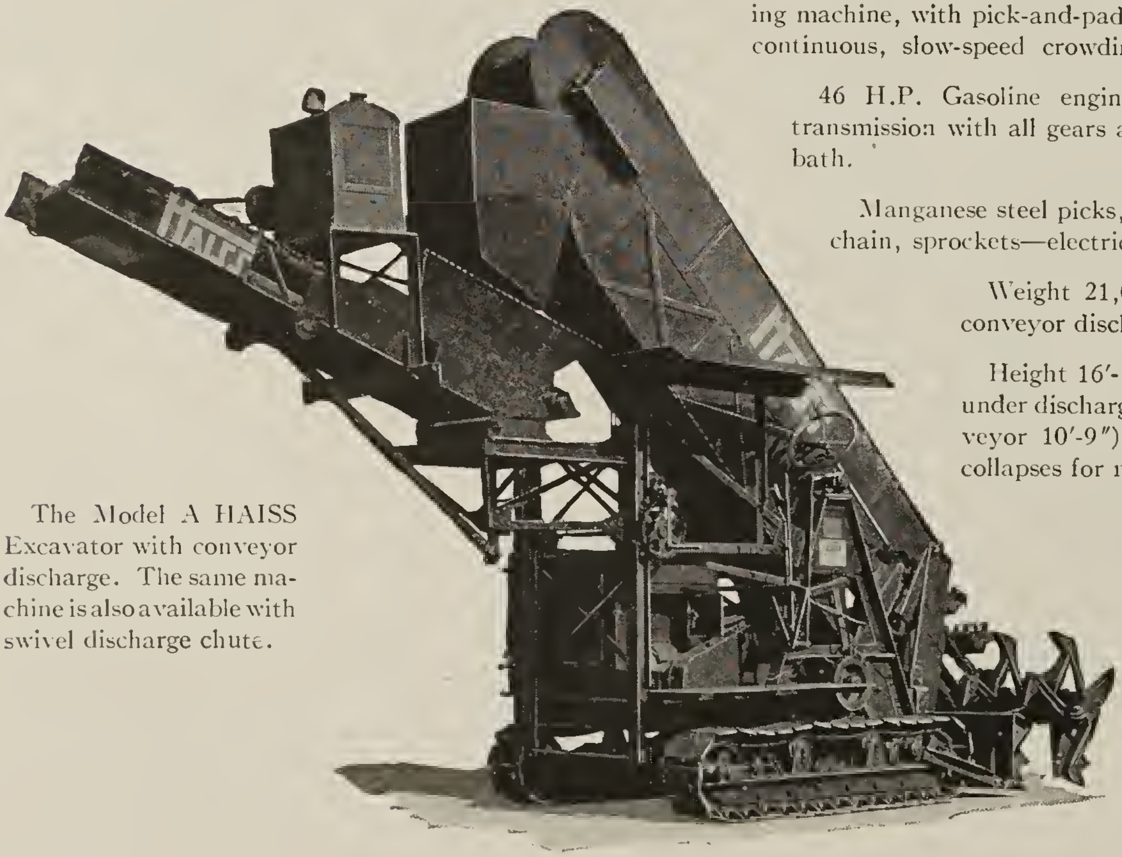
Creeper mounted, bucket elevator digging and excavating machine, with pick-and-paddle self-feeding device and continuous, slow-speed crowding drive.

46 H.P. Gasoline engine driving through Haiss transmission with all gears and clutches running in oil bath.

Manganese steel picks, paddles, buckets, elevator chain, sprockets—electric steel creeper tread links.

Weight 21,000 lbs. (24,000 lbs. with conveyor discharge).

Height 16′-10″, width 8′4″, clearance under discharge chute 8′-10″ (under conveyor 10′-9″) length 19′-6″. Elevator collapses for moving.



The Model A HAISS Excavator with conveyor discharge. The same machine is also available with swivel discharge chute.

HAISS "PATH DIGGING" TRUCK LOADERS

Manufactured by

GEORGE HAISS MANUFACTURING CO., INC.

NEW YORK

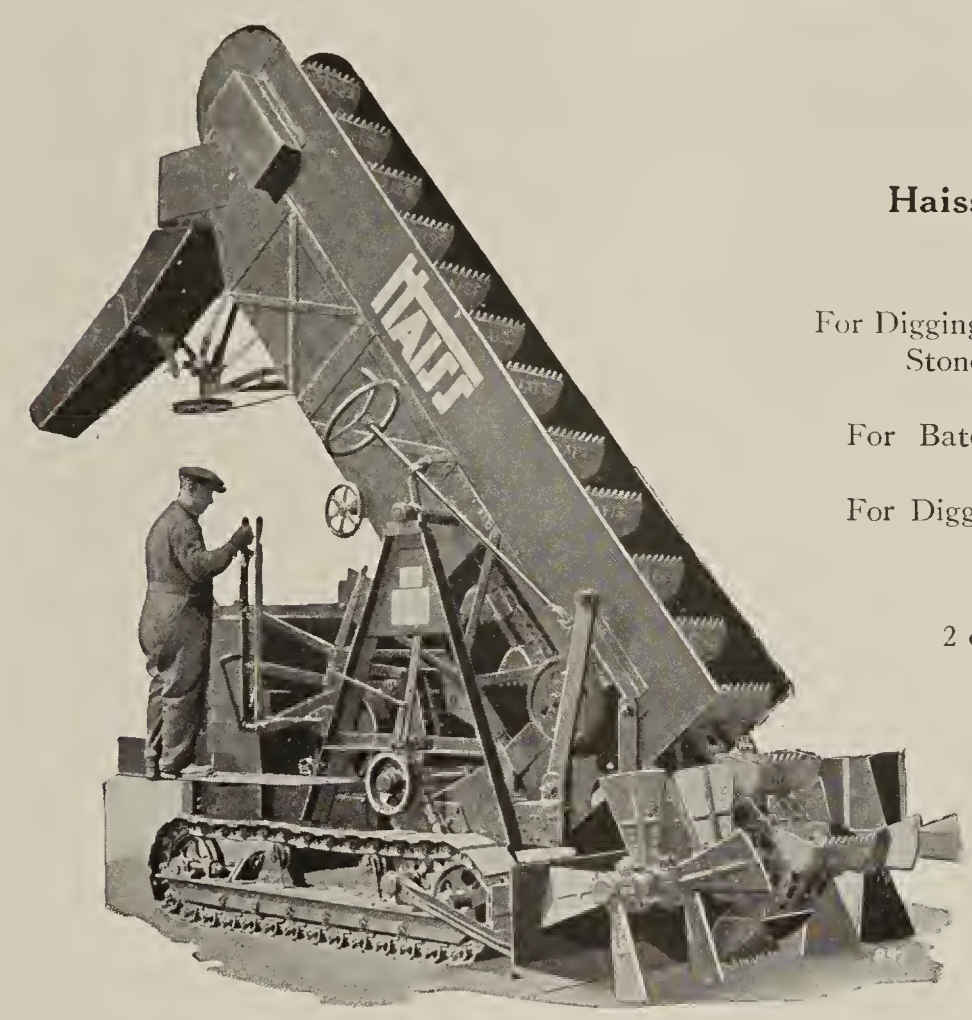
Haiss Creeper Loader MODEL 27

For Digging and Loading Sand, Gravel, Stone and Other Materials.

For Batching Concrete Aggregates.

For Digging Bank Sand and Gravel.

CAPACITY
2 cu. yds. per minute.



HAISS Model 27 "Path Digging" Creeper Loader measures up to all that Heavy Duty implies, in strength, in power, in workability, in completeness and convenience of operation.

HAISS "Creeper" Loaders are the heaviest and most powerful machines of their type. They will not only do more difficult work but will show consistently lower overall costs on the average job.

HAISS Loader Operating Speeds Include an Exclusive Slow-Speed Crowding Motion

The HAISS Loader was laid out with a special HAISS transmission and clutches designed to give the right speeds—one for traveling, one for manoeuvering into the pile, and one for crowding.

Forward—96 feet per minute or 1.1 miles per hour—which is as fast travel as good practice indicates for heavy unsprung equipment.

Reverse—This was designed by HAISS engineers to give a 65 foot per minute speed toward the pile—a speed just right for manoeuvering the machine into the pile quickly and spotting it easily.

Crowding—Continuous movement into the pile is an absolute essential to keeping every bucket digging out a full load. The HAISS Loader has a worm-driven crowding speed (patented) of 3 feet per minute.

This slow-speed crowding moves the Loader into the pile, 1 inch for each revolution of the feeding propellers—or ⅓ inch for every new bucket bite. The crowding drive can be engaged and disengaged at will. In a two-foot stockpile you leave the crowding gear engaged all the time.

HAISS Self-Feeding Device

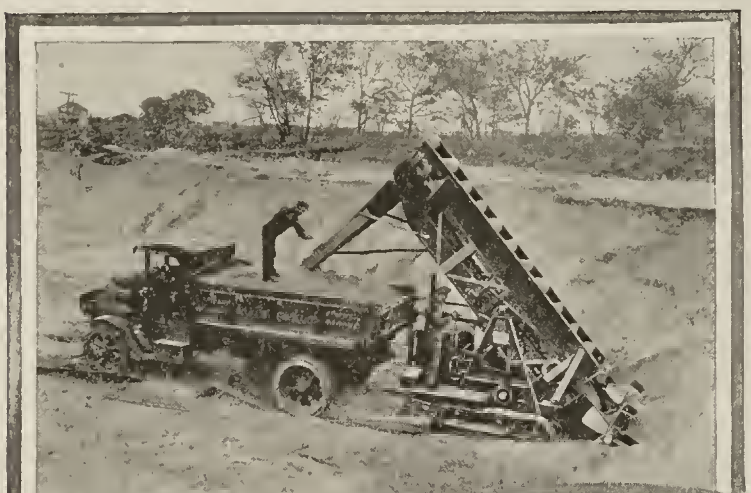
Heavy manganese steel paddles are bolted onto the squared tail-shaft of the elevator and revolve all the time the elevator is in motion. Nothing could be more simple, nor less liable to wear or breakage. The paddles are thick and rib-reinforced; the shaft is of special alloy steel and proof against any strains in normal service.

Clean-Up Scraper

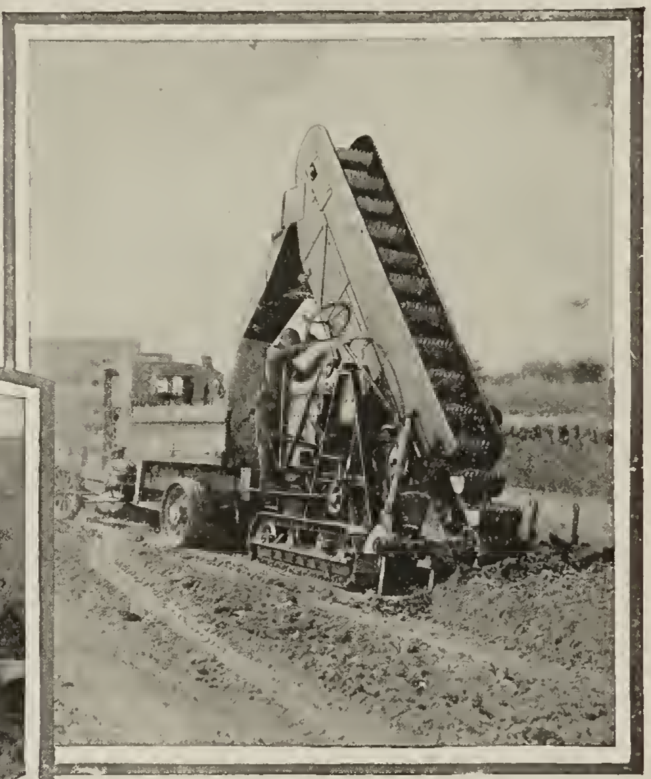
A simple device, hung from the elevator but held by thrust members which carry all the strain to the creeper tread axle and not to the elevator.

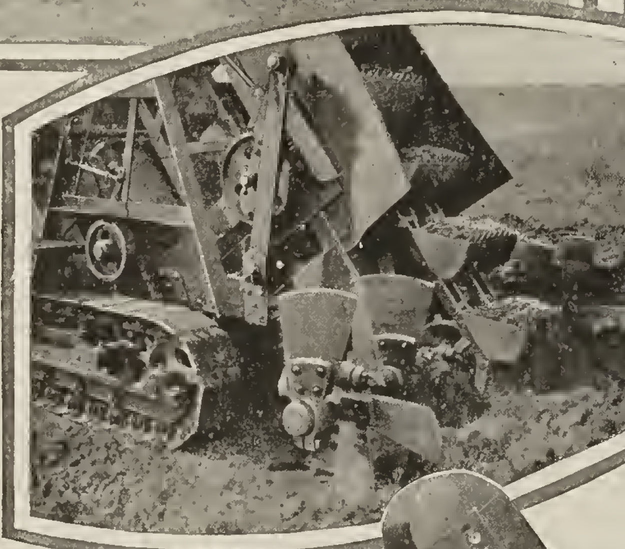
The scraper is adjustable in its setting in relation to the feeding propellers, the position being governed by the kind of work.

HAISS LOADERS ARE MACHINES OF ALL-AROUND UTILITY



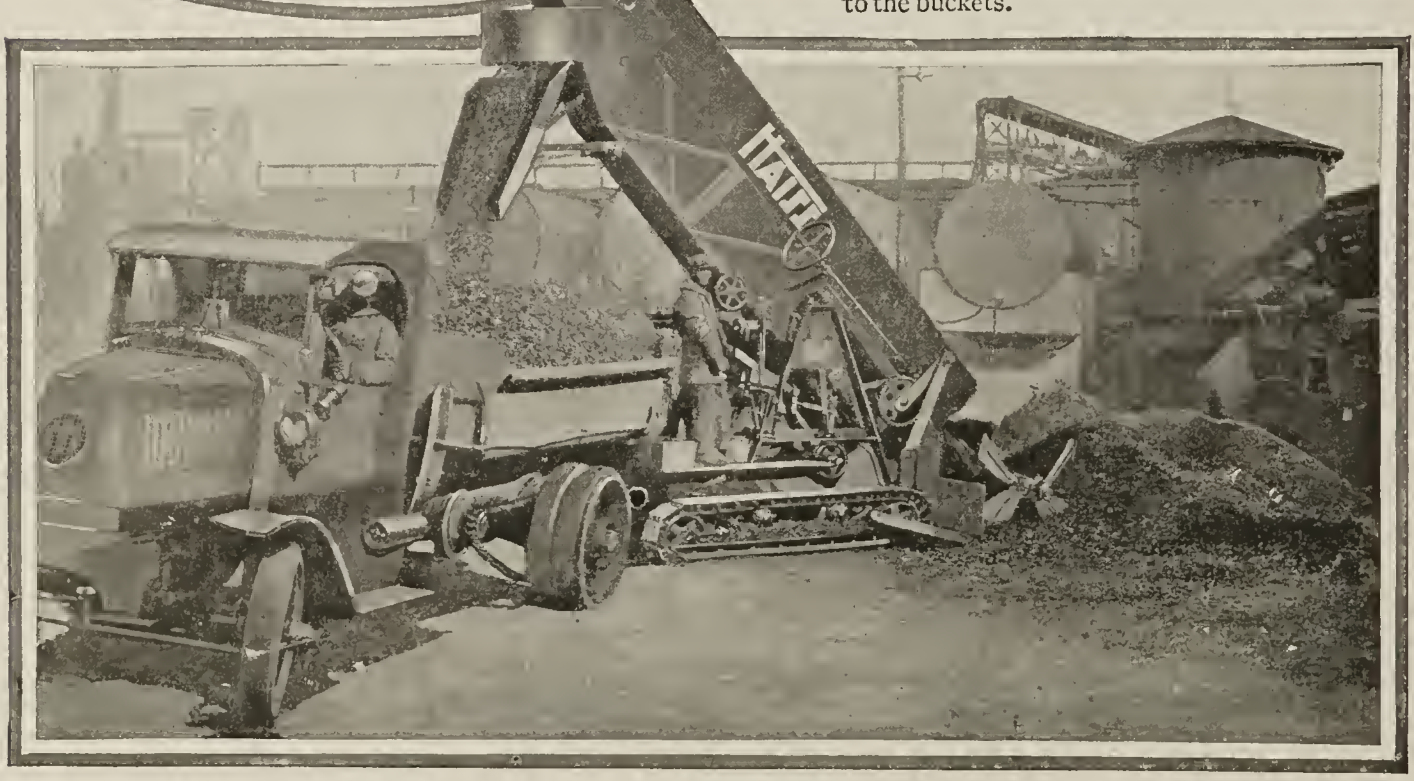
(At Left)—A HAISS Creeper Loader loading sand in a pit belonging to Rockaway Sand & Gravel Co., Lynbrook, N. Y. Slow speed crowding applies digging pressure.





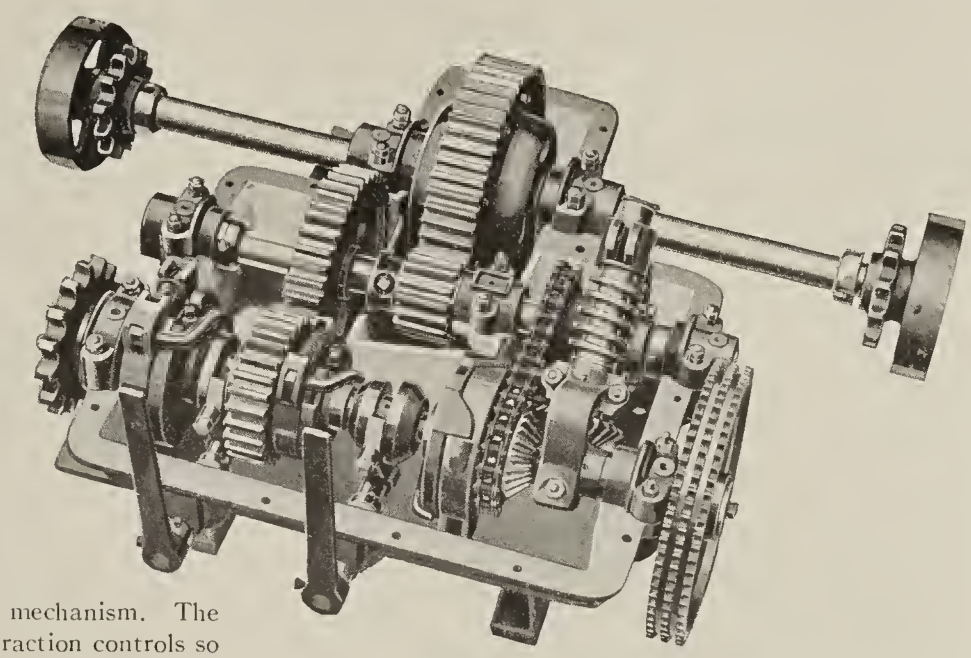
A close-up of HAISS Patented Feeding Propellers.

(Above)—At work at Los Angeles, Cal., excavating subgrade (after plowing) for United Concrete Pipe & Construction Co. The propellers pick and break up the material as well as feed it to the buckets.



A HAISS Model 27 Creeper Loader, the second of two HAISS Loaders in use by the Department of Highways, Washington, D. C. for loading "cold patch" tar macadam. The successful loading of this sticky, dense material is perfect evidence of the positive digging ability of the HAISS feeding propellers, working with the slow-speed crowding drive.

Enclosed Transmission Housing All Clutches and Gears



HAISS Transmission with cover removed showing how clutches and worm drive crowding speed run entirely submerged in oil.

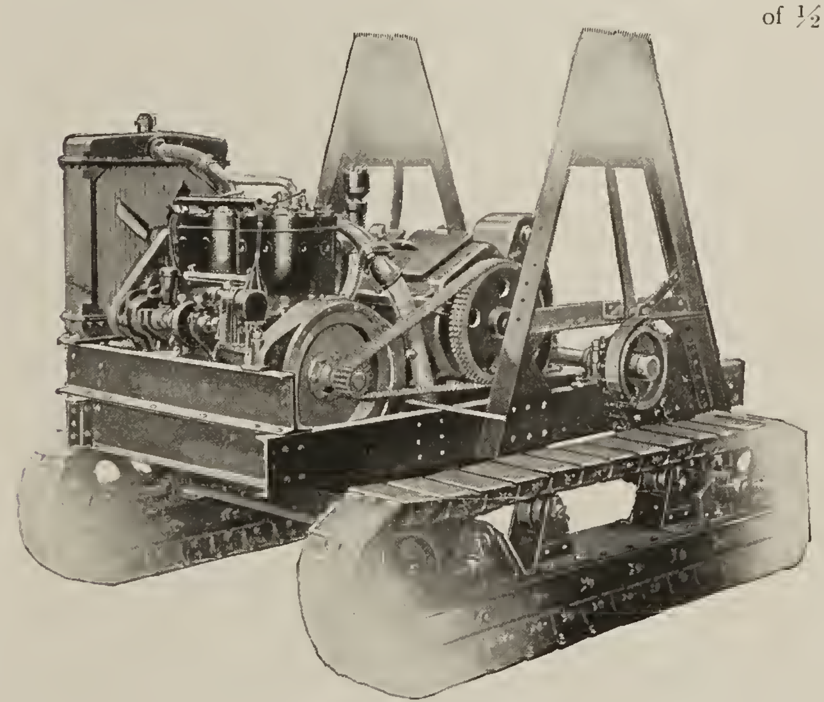
The HAISS Loader engine applies its power to operating the machine's various motions through a transmission specially designed and built for Loader service. Gears, and clutches for both traction and elevator drives, are all in one transmission case, running in oil and tightly enclosed. The crowding speed (patented) is also in the transmission case. It is a worm gear drive from the elevator motion and is engaged by throwing a lever which meshes the worm with the drive gear. This latter carries the motion to the creepers through the regular drive mechanism. The "Crowding" lever interlocks with the traction controls so that it cannot be wrongly engaged.

The Chassis and Creepers

The chassis of the HAISS Creeper Loader is completely braced and the countershafts are all in the transmission box—a rigid unit construction. The slow crowding speed and simple feeding device make it possible to mount the elevator on a rigid pivot shaft carried in bearings on the A frames of the chassis. The HAISS elevator is well balanced and easily adjusted for feeding level.

HAISS creepers are simple in design and as nearly proof against both wear and abuse as good engineering can make them. The structural steel frames carry track rollers, sprocket and idlers. The rollers and sprockets are of electric steel, bronze bushed and Alemite lubricated.

Note particularly that the teeth of the manganese steel track drive sprocket are wedge shaped so that they automatically force out the dirt and stones that otherwise might clog them. The cored-out openings in the track webs, keep the tread plates from clogging.



The HAISS Loader Power Plant

The chain drive to the creeper is not direct to the track sprocket, but to a long hub sprocket-and-pinion casting of manganese steel on the rear axle shaft, the pinions meshing in the track sprocket. This design has the special merit of giving the creeper drive chains full 8 inches ground clearance—a valuable feature in traveling on soft ground.

Seamless Forged Buckets

HAISS Loader buckets are of seamless one-piece design, forged from quarter-inch boiler plate, a stronger and more rigid bucket than any riveted construction. They measure 12 x 18 inches and have a capacity (water level measure) of ½ cubic foot. The buckets are bolted to steel attachment links in the elevator chain, and are spaced 16 inches apart.

Manganese Steel Parts

In addition to its use for creeper parts, manganese steel is the material employed to give long life to elevator sprockets, feeding propeller blades, elevator chain blocks (mild steel is used for side links), and creeper drive sprocket and pinion.

In connection with HAISS elevator chains, it should also be noted that the chain pins are Mayari steel and are double locked against turning. HAISS elevator chains test to 36,000 pounds tensile strength each. This strength is matched by that of the elevator and elevator drive sprockets, with the result that they will withstand the entire power of the 41 H. P. motor without breakage. Overload may cause clutches to slip, or the motor to stall, but will not cause breakage.

Detail Specifications of Haiss Model 27 "Creeper" Loaders

Rated Capacity—2 cu. yds. per minute, handling any material weighing up to 165 lbs. per cu. ft. and which is in lumps which will pass through a 4″ ring.

Power Plant—41 H. P. Ricardo Head Waukesha motor (4⅜ x 5¾″) complete with magneto, impulse starter, intake air cleaner, automatic manifold heater, gasoline strainer—together with radiator, gravity feed fuel tank and piping. Equipped with Twin-Disc Clutch.

—Or 25 H. P. Electric motor of electrical characteristics to suit available current supply. Power plant completely housed and doors provided with padlocks.

Transmission—HAISS built transmission box housing all clutches, all speed change and reduction gears, and the slow-speed crowding worm drive. All run in oil and are completely protected from dust and grit.

Engine Drive—Triple strand bushed roller pin chain from sprocket on engine, or motor, to countershaft in transmission.

Chassis Frame—Structural steel frame of 7″ channel members, carrying A frames on which the elevator boom is pivoted. The frame is braced in every plane.

Creeper Treads—Double creeper tread units 6 ft. 3½ in. long center-to-center, and of 10 in. tread width, giving a ground bearing pressure of 9¾ lbs. per sq. in.

Creeper frames of structural steel carry 6 track rollers, and two upper track idlers. All rollers and sprockets are fitted with renewable bronze bushings, and are alemite lubricated.

Tread plates of special electric steel are smooth faced and of curved overlap design which prevents clogging. Bolt holes for grousers are provided.

Track drive sprocket is of manganese electric steel and has self-cleaning teeth of special design.

Chassis Suspension—Creeper treads carry chassis with 3-point suspension, with pivoted equalizer bar under front of loader.

Elevator Boom—Truss type, of structural steel and well enclosed. Rigidly pivoted to A frames and raised and lowered with hand-wheel operating worm-gear and jack-knife levers. Self-locking in any position.

Elevator Chains and Sprockets—Chains of manganese steel block and steel side link type, with Mayari steel pins. Sprockets of manganese steel keyed to alloy steel shafts.

Elevator Buckets—Seamless forged from quarter inch steel plate and reinforced with a toothed cutting edge. Size, 12 x 18″, spaced 16″ apart.

Feeding Device—Manganese steel feeding propellers, one-piece type, with bolted cap making a square hole, on squared shaft of heat treated alloy steel—the 7 propellers on each side of the elevator forming converging, interrupted screw conveyors, carrying the material from an 8 ft. width on the face of the pile to the buckets.

They dig a path 2 ft. wider than the caterpillar treads.

Elevator Drive—Heavy duty bushed roller pin chain of 2″ pitch, from transmission box to sprocket on pivot shaft, and thence to head shaft sprocket.

Creeper Drive—Heavy duty bushed roller pin chain from transmission to sprocket and pinion meshed with track sprocket.

Steering—Loader steered by woven-asbestos-lined brakes on transmission differential shafts, applying either of which slows down or stops the creeper tread on that side and causes the opposite tread to carry the machine around.

Controls—Five only as follows: (1) Elevator drive, (2) Crowding motion, (3) Traction speeds, (4) Steering, and (5) Elevator raising gear.

On swivel spout machines the swinging gear will become the 6th control—or on batch hopper machines the strike-off and discharge levers.

Lubrication—Engine and transmission splash and bath lubricated, all other lubrication points provided with fittings for pressure grease lubrication.

Clean - Up Scraper—Hung from elevator with thrust bars pivoted to creeper tread axle.

Bumper—Structural steel, lagged with hardwood and steel plate, completely shielding the loader mechanism.

Discharge Equipment—Straight (or fixed) discharge spout, swivel spout, screen chute (for coal), HAISS Precision Measuring Hopper or HAISS Weighing Hopper.

Labor Required—One operator only.

GENERAL DIMENSIONS

Height Overall (working position)	16 ft. 10 ins.
Height under Swivel Spout	9 ft. 7 ins.
Reach from Bumper	5 ft. 8 ins.
Height under Precision Hopper Discharge Chute	7 ft. 0 ins.
Reach from Bumper	5 ft. 7 ins.

Height Collapsed (for moving)	9 ft. 6 ins.
Length Overall (working position)	18 ft. 7 ins.
Width over Creepers	6 ft. 2 ins.
Width Overall	8 ft. 0 ins.
Weight (with Gasoline Motor)	14,500 lbs.
Weight (with Precision Hopper)	16,000 lbs.

HAISS LOADERS WITH PRECISION HOPPER

For Batching Concrete Aggregates

The HAISS "Precision" Hopper is the most accurate batch hopper for loading concrete aggregates for feeding a paving mixer. It has a telescopic body portion which is adjustable for any capacity from 10 to 18, or 18 to 30 cubic feet. A graduated scale on the side of the hopper guides its capacity setting.

The outstanding superiority of this "Precision" Hopper is the *strike-off* which gives it its extreme accuracy of volume measurement—an accuracy which comes well within the specifications of State and other Highway Departments.

The strike-off and chute-gate control levers interlock so that no material can be put in the hopper after it is struck-off nor can the discharge chute be opened until the batch has been struck-off. There can be no accidental false motions.

The Two-Batch Hopper and Double-Batch Creeper Loader

The Contractor who plans to use 2-batch trucks will be interested in the double-batch HAISS Precision Hopper. The general design of this hopper follows that of the single batch measuring unit with very minor structural changes. It may be had with or without the strike-off as the user prefers.

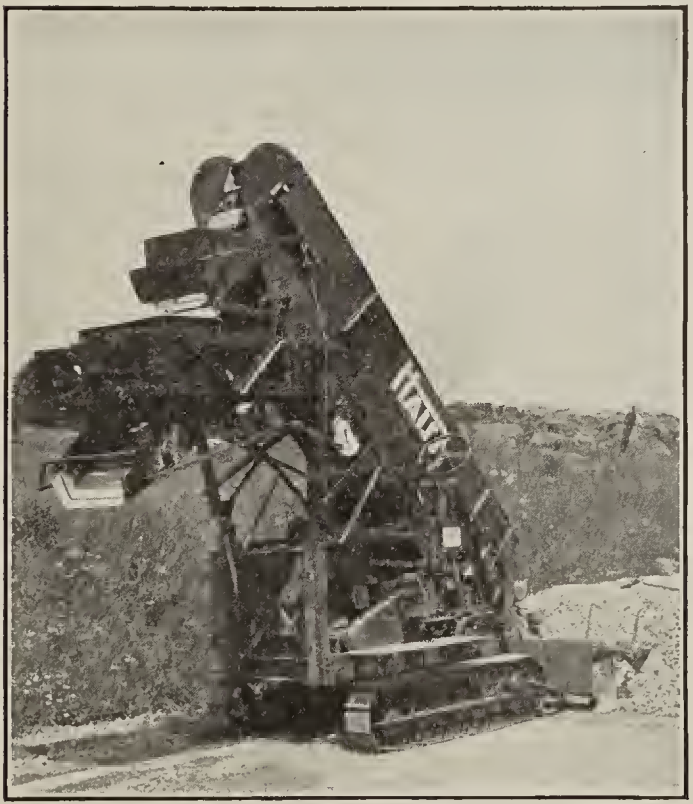
The size and loaded weight of the double-batch hopper is such that a 2-Batch Creeper Loader is required, which has a 20% longer creeper mounting with corresponding changes in the design of the chassis, front axle and other load supporting parts.

Details will be furnished on request.

Batching aggregates with the HAISS Precision Hopper.

HAISS LOADERS WITH WEIGHING HOPPERS

For Batch Measuring of Aggregates



HAISS Loader with Weighing Hopper.

Where the contractor's preference or Specifications dictate, batches can be loaded and measured from Advance Stockpile Storage with HAISS Weighing Hoppers on HAISS Models 16 and 27 Loaders. This HAISS Weighing Hopper is a simple, rugged batch box which, in practical operation, holds batch weights to within a 5-10 pound leeway.

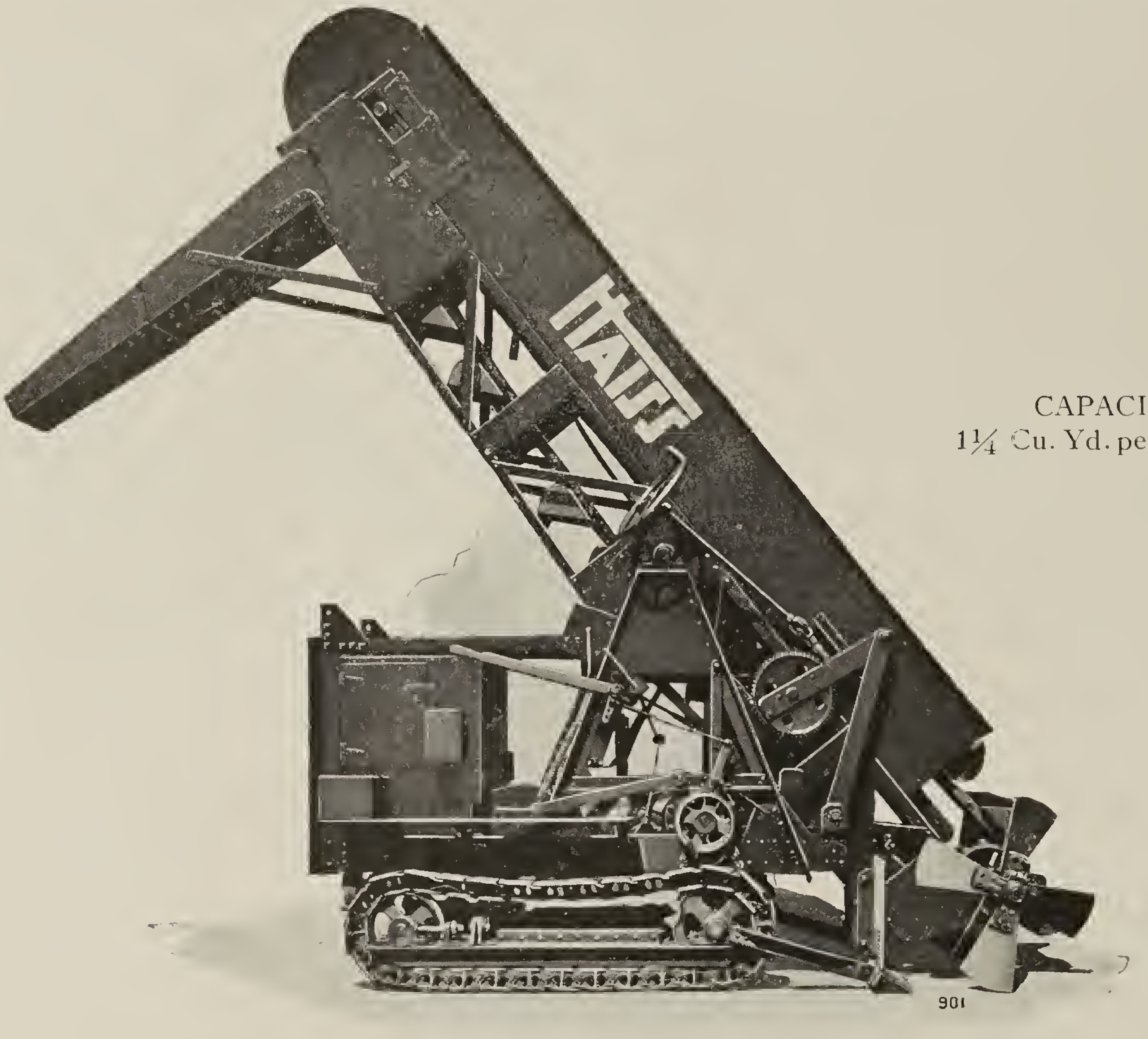
As the illustration shows, a small receiving hopper is normally open and passes the elevator discharge up to the point where close weighing begins. There the gate is closed and manipulated to trickle material into the weighing hopper proper until the scale pointer registers.

These Loader Weighing Hoppers are built in one size, for a maximum capacity of 30 cu. ft. Filler plates adjust the capacity downward, as required for any weight setting, to a minimum of 12 cu. ft.

This equipment has a record of successful performance and has given thorough satisfaction.

HAISS "MODEL 16" CREEPER LOADERS

A Medium Duty Loader for Material Yards, Loading and Batching Sand



CAPACITY
1¼ Cu. Yd. per Minute

The HAISS Medium Duty "Model 16" Creeper Loader

The demand for a medium duty loader capable of handling coal, loading and batching sand and fine gravel is met with the HAISS "Model 16" Creeper Loader. This is a loader which, in proportion, is as strong as the larger Model 27. In fact many of the parts, such as Creeper Track Links, Pins, Front Idlers and Takeups and the Elevator Raising and Lowering, are interchangeable with the big loader. And in other major details the machines are similar except that "Major 16" is a smaller machine. The buckets are 12″ x 16″ HAISS Riveted Steel Plate, equipped with teeth, giving the loader a capacity in excess of 1 cubic yard per minute

A sand hopper holding 10 to 18 cubic feet can be mounted on "Model 16" making it an ideal unit for batching sand for road paving jobs.

Engine—30 H. P.

Transmission and Clutches—Enclosed in transmission case.

Forward—20, 40 and 100 feet per minute.

Feeding—40 feet per minute.

Reverse—40 feet.

HAISS Self-Feeding Device—Heavy steel propellers bolted to squared shaft revolve while elevator is in action. Feeding propellers—7 feet wide.

Clean-Up Scraper — HAISS Standard — catches all spillage and returns it to self-feeding propellers.

Creepers—5 feet 6 inches center to center, HAISS Standard.

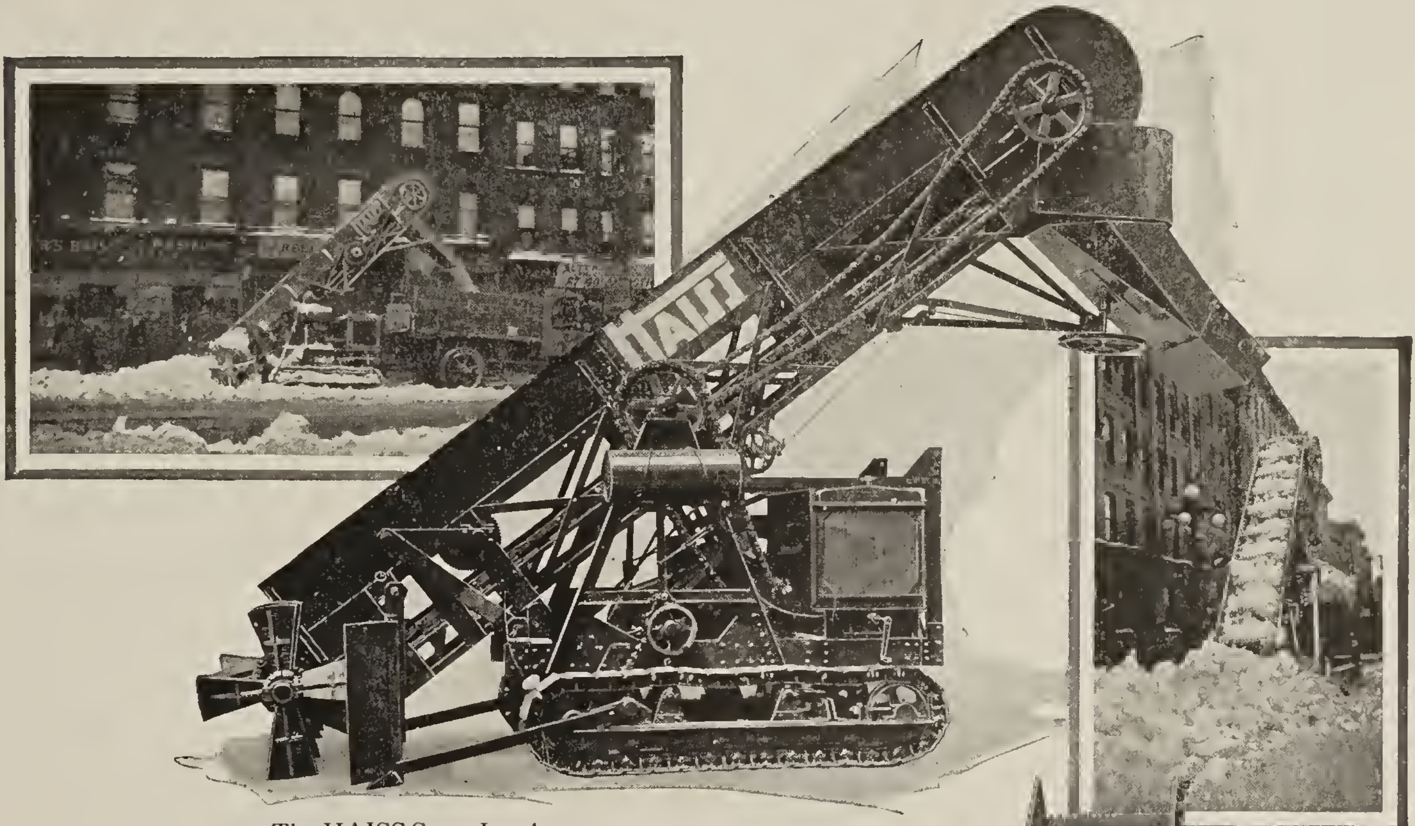
Buckets—HAISS Riveted Steel Plate, Toothed.

HAISS PATH DIGGING SNOW LOADERS

Manufactured by

GEORGE HAISS MANUFACTURING CO., INC.

New York



The HAISS Snow Loader

The HAISS Snow Loader is a universally useful snow loader. It has a very large capacity and in light snow will put up an 8 or 10-yard load in a minute. It has the weight, strength, power and cutting action to dig and load wet, sticky or frozen snow.

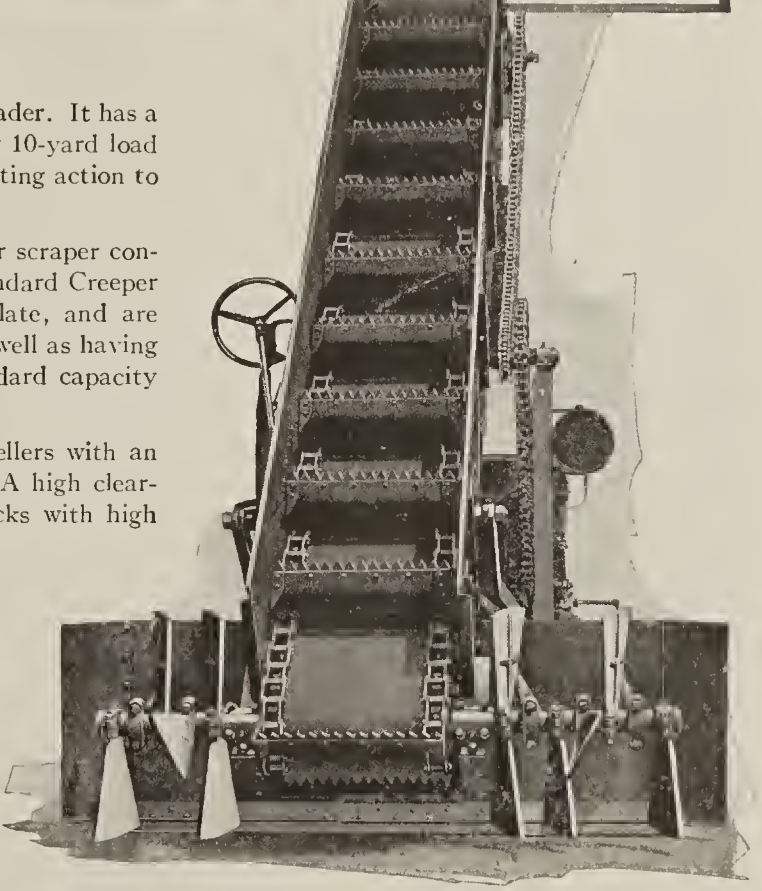
The Snow Loader is a special HAISS designed flight or scraper conveyor, 33 inches wide, mounted on the chassis of the standard Creeper Loader. The flights are 11 inches high, of ¼ inch plate, and are formed with an end reinforcing and stiffening flange—as well as having a toothed plate riveted on the cutting edge. The standard capacity rated is 10 cubic yards per minute.

The Snow Loader uses standard HAISS feeding propellers with an extra high clean-up scraper. No shoveling is needed. A high clearance (9′ 3″) discharge chute enables the loading of trucks with high side boards.

The Snow Loader boom may be mounted on a standard HAISS Loader or, contrariwise, a Bucket Elevator substituted on the Snow Loader. This dual purpose use of the HAISS Creeper machine makes it possible to keep it busy in all seasons.

Crowding Speed—9 feet per minute.
Width Clean-Up—8 feet.
Weight Complete—16,000 lbs.
Snow Boom Only—8,150 lbs.

For full description ask for the Snow Loader Catalog.



The feeding end of the HAISS Model 27 Snow Loader, showing the self-feeding propellers and high clean-up scraper.

HAISS BRICK AND PACKAGE CONVEYOR

Manufactured by
GEORGE HAISS MANUFACTURING CO., INC.
New York

A Wire-Link-Belt Type Conveyor of Many-Purpose Utility

The HAISS Brick and Package Conveyor is a new type of the standard belt conveyors shown on the following pages.

The limitation of a rubber belt has handicapped the application of belt conveyor economies in handling some materials. What has been needed is a belt to withstand shock, to resist abrasion and have a long life under severe service. HAISS has produced such a belt and built a special type conveyor for handling bricks, bundles, shingles, bags, boxes and package goods.

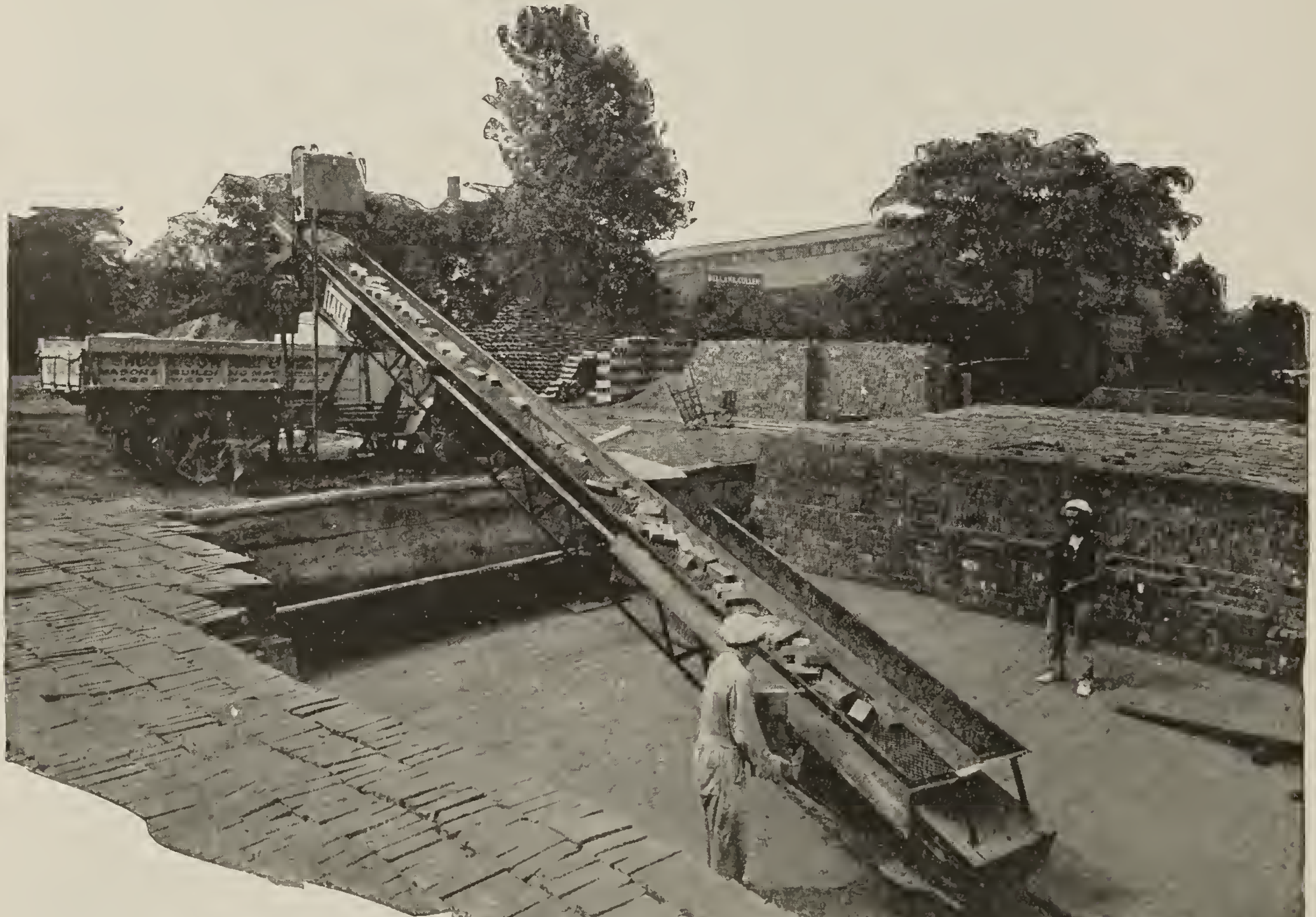
This type of conveyor is admirably adapted to use on barges, shipping platforms, freight cars and for building supply yard usage.

The Chain Link Wire Mesh Belt

The new type conveyor has an open mesh, woven wire conveyor which is stronger and more durable than rubber belt. The chain-link weave gives perfect flexibility for conveyor use, and a hinge jointing which avoids any binding of the wire itself. This chain-link belt is of copper-bearing steel which is also galvanized for better rust resistance.

Spring Cushion Ball-Bearing Belt Rollers

To take up the shock of loading HAISS has equipped this new conveyor with specially designed spring cushion belt rollers. As in the case of all HAISS Belt Conveyors, these rollers are of steel and are equipped with factory lubricated and sealed ball bearings.



HAISS Brick and Package Conveyor used for unloading bricks direct from barge to trucks in one operation. One of many uses for this type machine.

HAISS PORTABLE BELT CONVEYORS

Manufactured by

GEORGE HAISS MANUFACTURING CO., INC.

New York

A portable belt conveyor, to be satisfactory, must be safe to entrust to a man who knows little or nothing about machinery. HAISS Belt Conveyors do not need an engineer. They are built for supreme reliability, to operate continuously under all conditions, and to be fool-proof. They are good machines embodying features of design and construction that mark them as better-than-common. Yet they deliver so much more that they cost much less per unit of work delivered.

A consideration of the design of the various parts as described in these pages will convince that nothing has been slighted which makes for reliability. HAISS builds right!

Types of HAISS Machines

The standard conveyor is a wheel-mounted machine designed to be moved about by hand. These standard machines are built in a variety of belt widths and in lengths to 60 feet. The size, weight and balance of these units are such that movement over any level ground is accomplished without difficulty by two or more men.

HAISS Belt Conveyors can be built as self-propelling units. These power propelled "belts" can also be had with the conveyor mounted on a turntable, so that it may be swung in a complete circle without moving the chassis.

Features of Design

Before you make any choice of Portable Conveyor Equipment, consider carefully how much more of real value HAISS offers you. Look well at the superior features of design which are shown in the pictures. Practically all are found only on HAISS Machines. Better design and better building mean something very real to you—doing more work, with less fuss and flurry, throughout a much longer life.

Ball-bearing rollers are a feature of all the HAISS Machines. In long life and all-around saving they are not to be compared with common roller-on-a-rod. They alone make HAISS machines capable of much more work.

Hyatt Roller Bearings in the pulley at the foot of the machine permit the safe use of a small tail pulley and a very low loading point. This very necessary feature is not found on cheap units. It is of particular value in unloading hopper bottom cars.

Truss Conveyor Frame Design—The only construction which combines requisite strength with properly light weight. It makes a HAISS Belt Conveyor absolutely rigid under load.

Easily Manipulated Take Ups keep the belt in proper tension, overcome belt slippage and prevent unnecessary belt wear. Hand-wheel operated—no wrench to hunt for.

The HAISS Patented Raising and Lowering Device does its work with a minimum of manual effort. The crank operated winch is positive in action and sets the conveyor at any desired angle.

Close-Spaced Rollers at the lower end of the frame save strain and buckling of the belt where the load strikes. This adds much to belt life.

Standard Equipment

Standard electric motor driven units are furnished complete with electric motor, knife switch and line fuses, and male and female connector plugs for the flexible wire, which latter is furnished by customer.

Gasoline engine driven machines are regularly supplied with complete motor, including—starting crank, magneto and ignition switch.

Sizes

Troughing Type Belt Conveyors are standard in 16, 20 and 24-inch belt widths and in 20, 25, 30, 35, 40, 45, 50, 55 and 60 ft. lengths.

Inquiries

Inquiries should state the kind and amount of material to be handled and the length of conveyor wanted.

The more rugged the work the more you will value the quality in HAISS Portable Belt Conveyors.

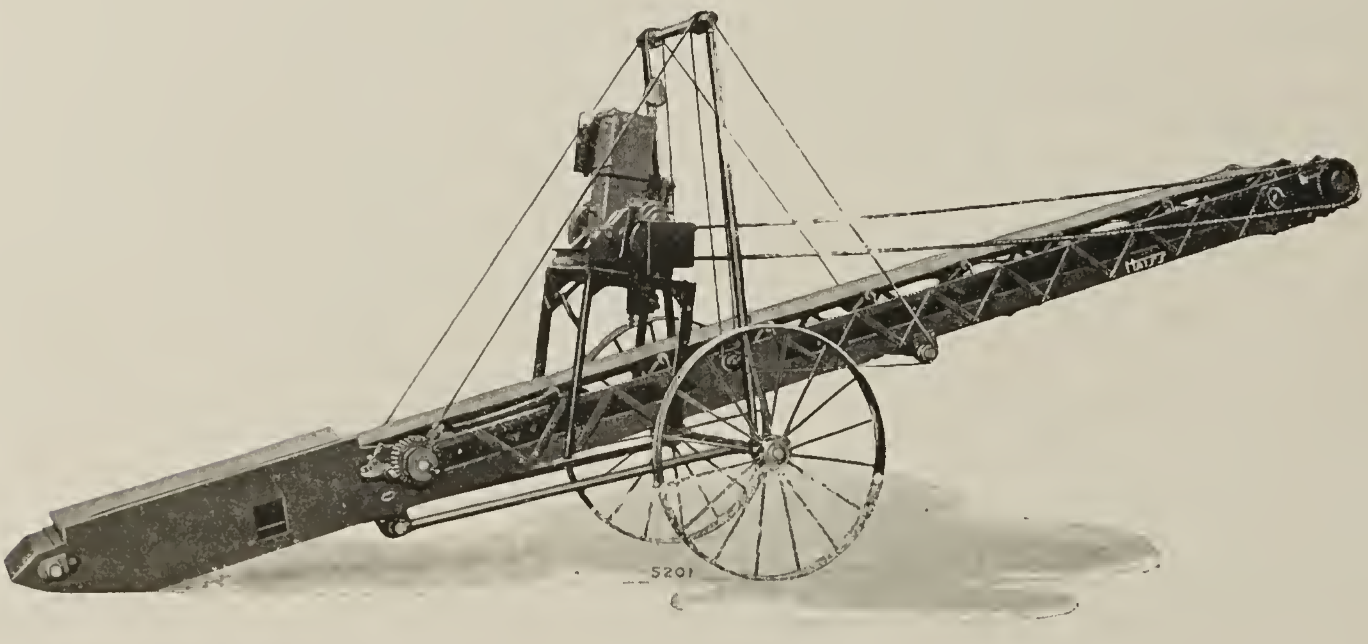
A typical use of HAISS Troughing Conveyors in placing wet concrete, a wide opening for cost saving.

STANDARD SIZES OF HAISS TROUGHING BELT CONVEYORS

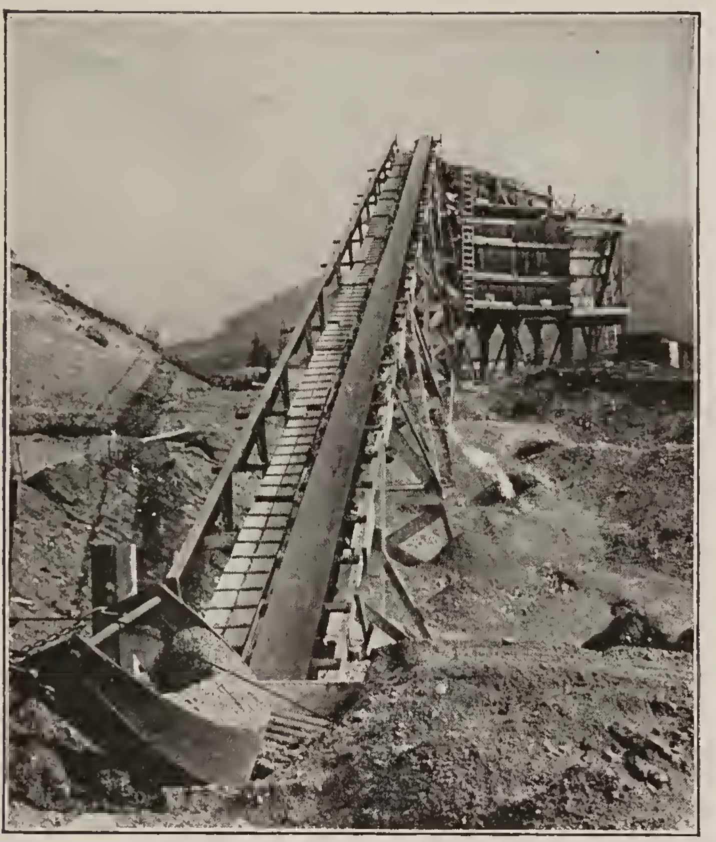
Width of Belt (Inches)	Length of Conveyor (Feet)	Motor H. P.	Maximum Angle	Weight	
				With Gasoline Engine	With Electric Motor
16	20	3	30°	2000	1800
	25	3		2300	2100
	30	3		2800	2600
	35	5		3500	3200
	40	5		3900	3600
20	20	3	30°	2300	2100
	25	3		2500	2400
	30	5		3300	3000
	35	5		3700	3400
	40	5		4200	3900
24	20	3	30°	2600	2400
	25	3		2900	2700
	30	5		3600	3300
	35	5		4200	3900
	40	5		4700	4400

45, 50, 55 and 60 ft. Conveyors are standard in all belt widths.

Details as to motor equipment and weights given on request.

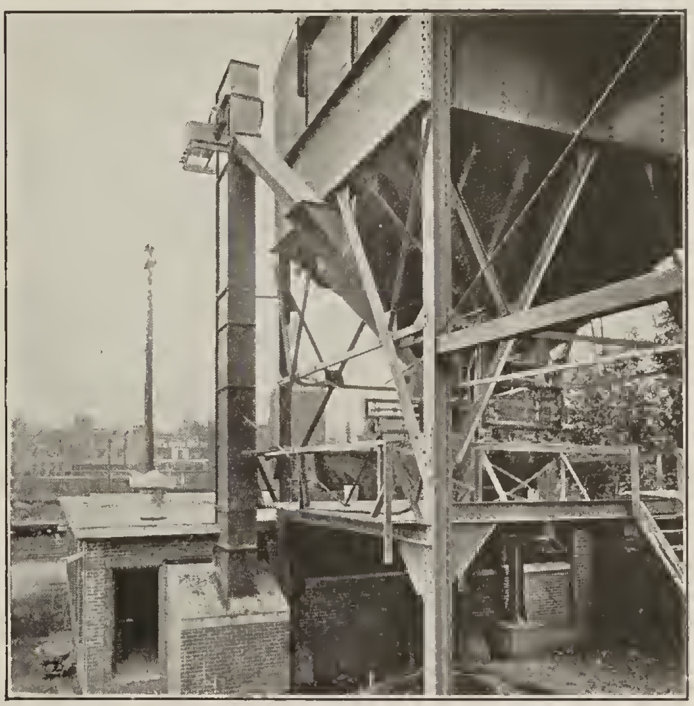


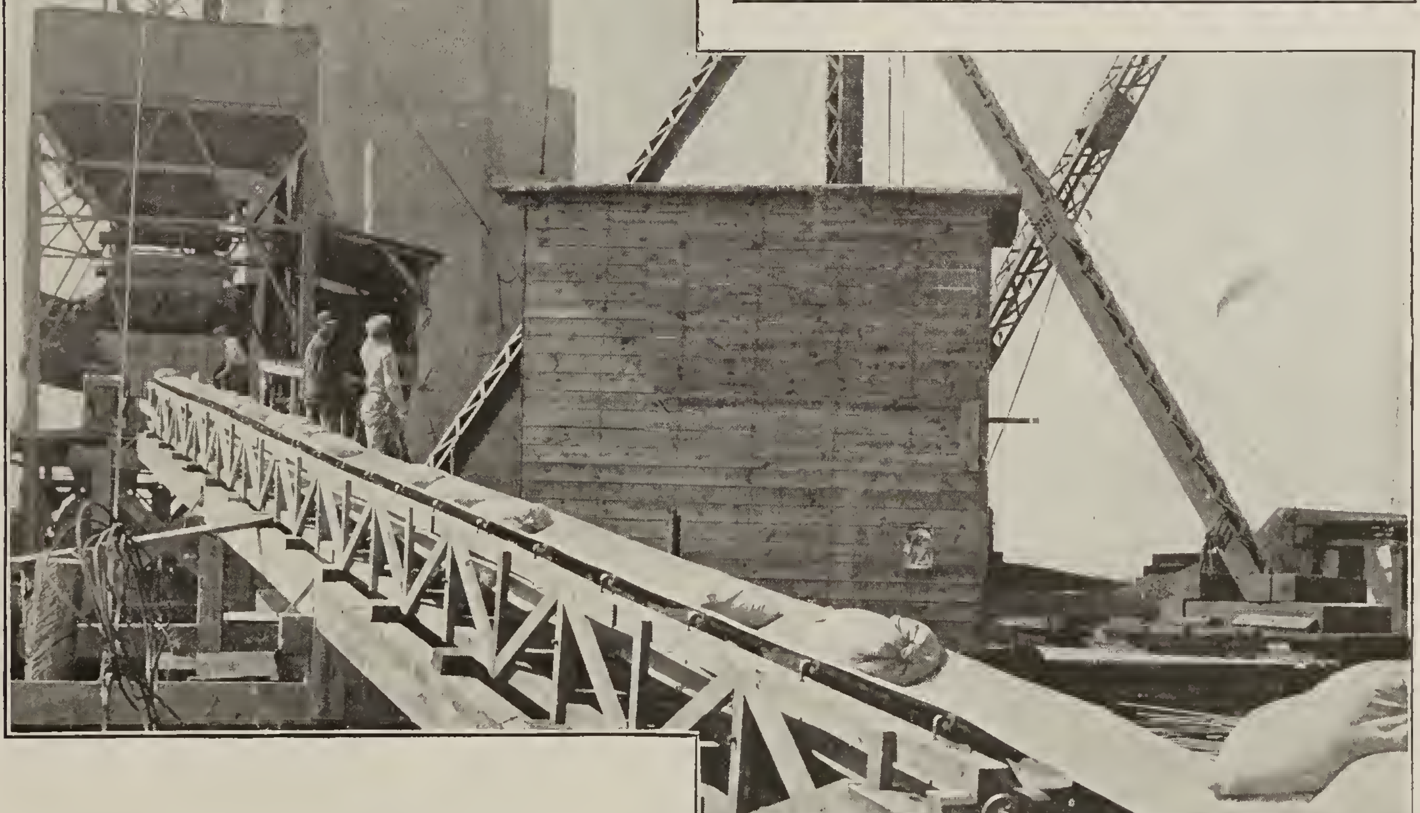
Haiss Portable and Stationary Conveyors Have Many Uses



Haiss Belt Conveyor delivering sand from drag line to elevated screen and storage hopper.

Haiss Bulk Cement Elevator with felt-packed, dust-tight casing—as used by central mixing plants and others.





Haiss Belt Conveyor handling bagged cement to mixing plant. The troughing conveyor runs smoothly on ball-bearing tubular steel rollers, using a minimum of power and requiring a minimum of attention.

HAISS ELEVATORS AND CONVEYORS

For Sand, Gravel and Quarry Plants and for Industrial Installations

Manufactured by

GEORGE HAISS MANUFACTURING CO., INC.

New York

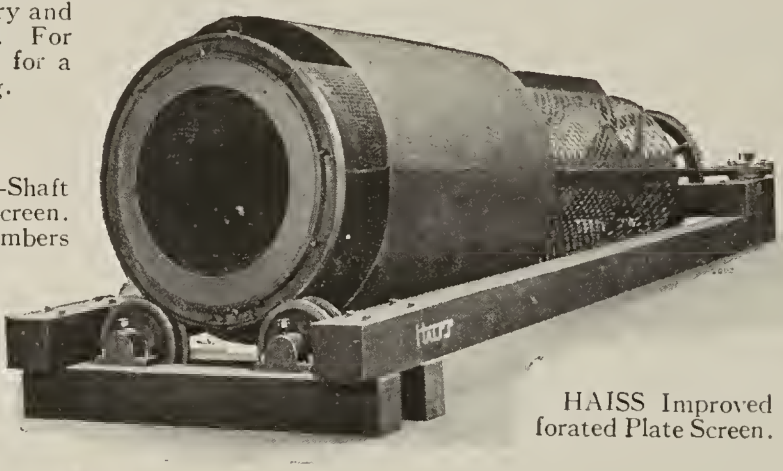
The HAISS line of Plant Equipment includes practically everything in the line of material handling machinery and accessories. These pages illustrate typical units. For more complete information we invite your request for a copy of the manufacturer's comprehensive Catalog.

Revolving Screens

These are of two general designs: (a) the Center-Shaft type and (b) the HAISS Improved, Heavy Duty Screen. The latter has an external frame of structural members which carry the perforated plate screen sections. This design affords a complete freedom from inside obstructions.

For sand washing, this screen is fitted with a "scrubber" section at the upper end.

HAISS Standard Screens range from 30 to 72 inches diameter and from 8 to 32 feet length. Any operating conditions can be met.



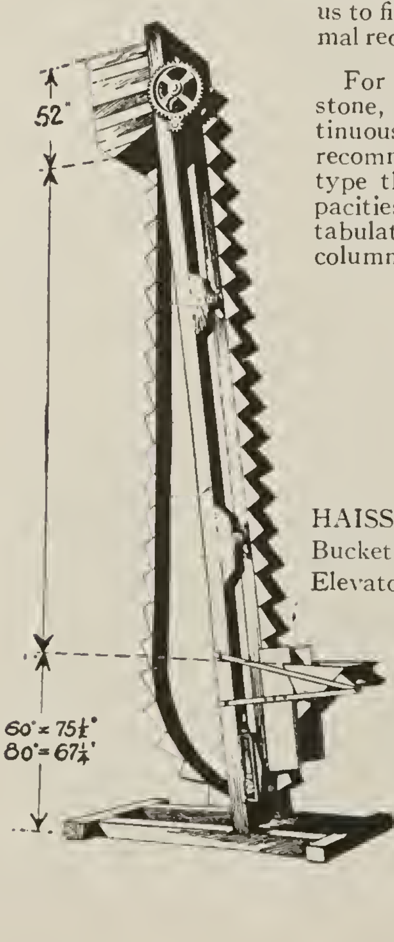
HAISS Improved Perforated Plate Screen.

HAISS Elevators

HAISS Bucket Elevators for sand, stone, coal, ashes, lime, grain, gypsum, slag, shale, etc., are standardized in two general types: (a) Continuous (with overlapping buckets as illustrated) and Centrifugal Discharge (with spaced buckets).

HAISS manufactures a range of sizes of the unit parts to enable us to figure on any normal requirement.

For sand, gravel, stone, etc., the Continuous Elevator is recommended, in which type the standard capacities range as in the tabulation in the next column.



HAISS Bucket Elevator

Continuous Elevator Buckets

Elevator No.	101	102	103	104	105	106	107
Capacity Cu. yd. per hour	30	35	50	60	70	80	100
Buckets, width	10"	10"	12"	14"	16"	20"	24"
Chain							
Strands	1	1	1	1	2	2	2
Style	102½	102½	102½	102½	102½	102½	102½
Speed, Ft. per Minute	100	100	100	100	100	100	100
Maximum length	60'	60'	60'	60'	80'	80'	80'

For handling coal or other lighter material write us for data on suitable elevator equipment.

HAISS Centrifugal Elevators, where discharge is effected by centrifugal force as the bucket passes over the head sprocket require a higher chain speed, and subject the materials handled to impact on discharge. Where the service is intermittent or light, and where non-abrasive materials are handled this type gives economical service. For data on standard sizes, capacity, ratings, etc., write us.

Centrifugal Elevator Buckets

Standard Elevator Parts

HAISS Elevator Parts interchange with other designs and can be furnished for replacement:

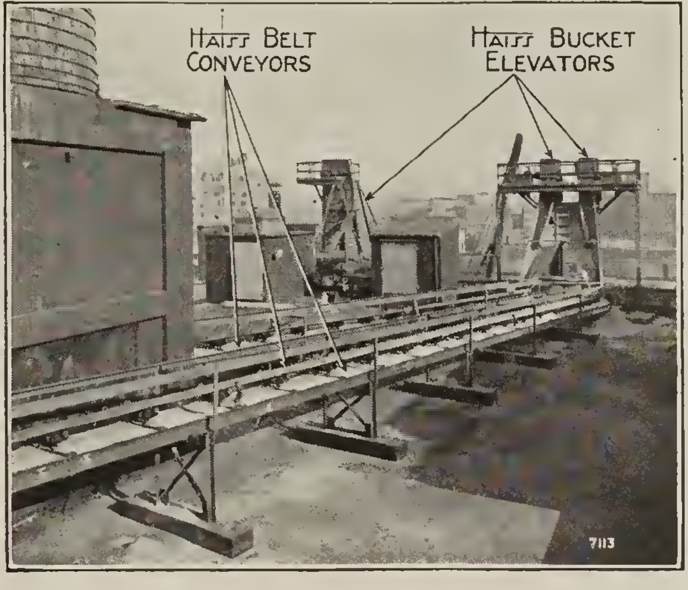
Elevator Buckets (Malleable, and Steel Plate).

Elevator Chain and Sprockets.

Steel Shafting and Bearings.

Take-Up Bearings—Idlers.

Elevator Boots—Gears, etc.



A HAISS Elevator and Conveyor installation at a central mixing plant.

A HAISS Boom Conveyor with HAISS Receiving Hopper used in placing concrete.

Bag Elevators

Are furnished for handling cement in sacks, for boxes, for barrels or other unit packages. Information on request.

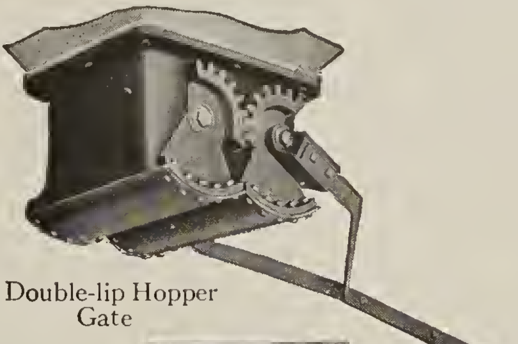
Cement Elevators

For handling cement in bulk, and for lime, plaster, gypsum, etc., are specially built to be dust tight and to have the working parts adequately protected. Information on request.

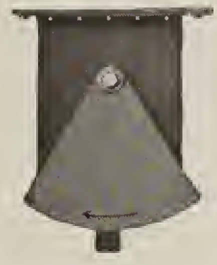
HAISS Belt Conveyor Systems

HAISS Belt Conveyors are catalogued, according to the duty intended, as Light, Medium and Heavy Duty. For light and medium duty service 12, 14, 16 and 20 inch belts are carried on two, troughing ball-bearing mounted rollers as illustrated in detail on this page. Heavy duty conveyors carry a 24 or 30 inch belt on triple, troughing rollers.

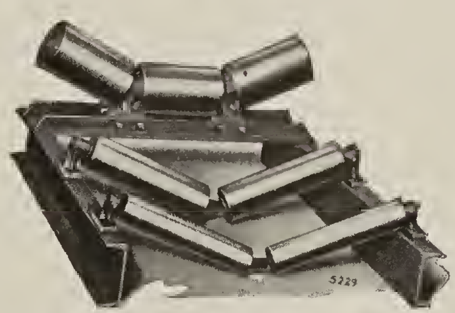
Any condition can be met. Any type loading can be devised and discharge chutes planned as necessary. HAISS Conveyors will carry any nonrolling material at inclines up to 30 degrees or higher.



Double-lip Hopper Gate



Single-lip Hopper Gate



Light, medium and heavy duty conveyor belt rollers.

Sectionalized Conveyors

As illustrated below permit the make up of any required length in multiples of 24 feet. The sections are interchangeable and can be assembled on the job, and easily taken down for moving.

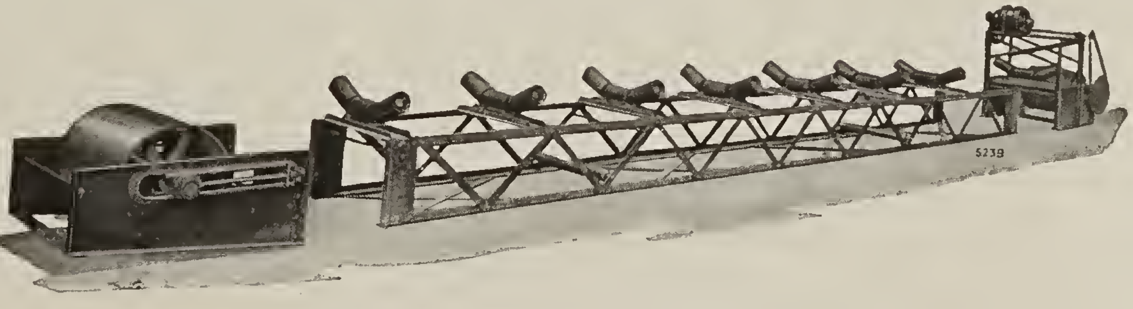
HAISS Sectionalized Conveyors can be furnished with any desired motive power or drive arrangement, and in 20 and 24 inch belt widths.

Conveyors for Wet Concrete

Handling wet concrete with either a Portable Conveyor, a Bail Suspended Conveyor Unit, or a Fixed Conveyor Installation involves nothing special other than care in washing down wherever the unit goes out of service. The labor saving opportunity is great, and the flexibility of application equally so. On many jobs, the saving will pay for the equipment in a few weeks work.

Hopper Gates, Chutes, Etc.

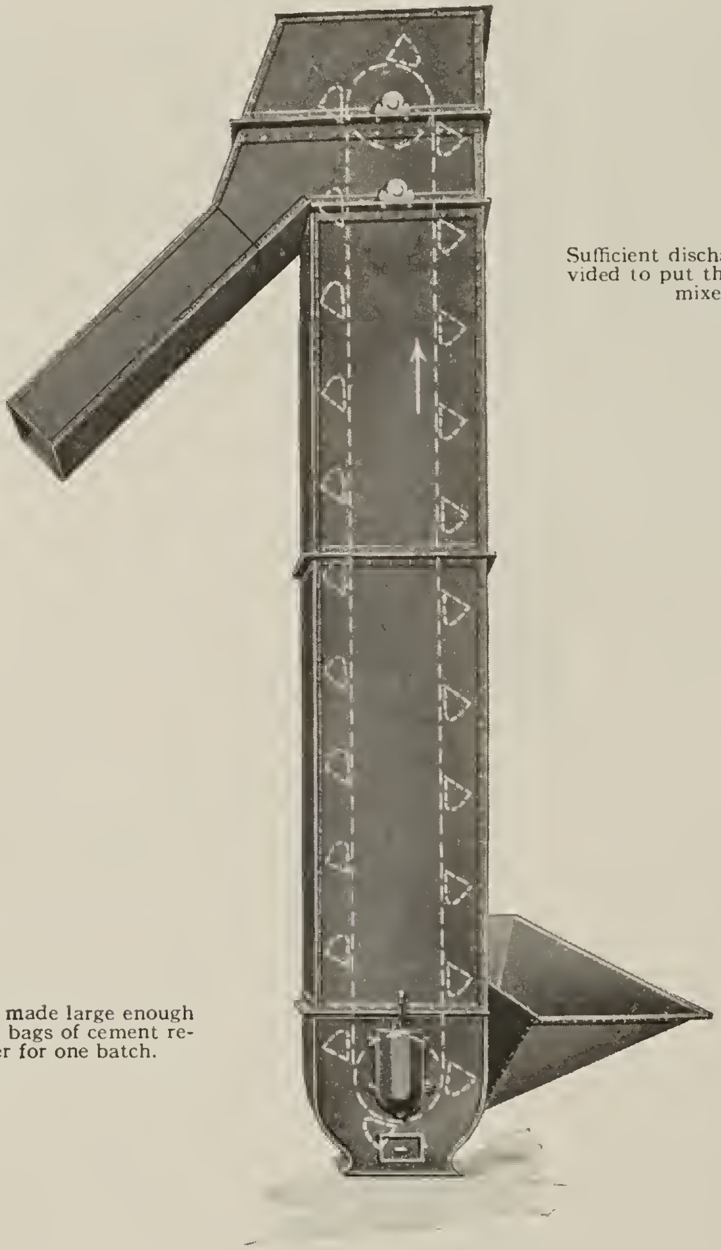
We can supply Hopper Gates of a complete variety of types and swivel and other chutes for any purpose. Send us a sketch of your requirements and we will be glad to quote you.



HAISS Sectionalized Belt Conveyor.

REX CONTRACTORS ELEVATORS

Made by Chain Belt Company, Milwaukee.



Sufficient discharge spouting will be provided to put the cement directly into the mixer batch hopper.

The loading hopper is made large enough to hold the number of bags of cement required by the mixer for one batch.

CUT YOUR CEMENT HANDLING COSTS WITH A REX CEMENT ELEVATOR

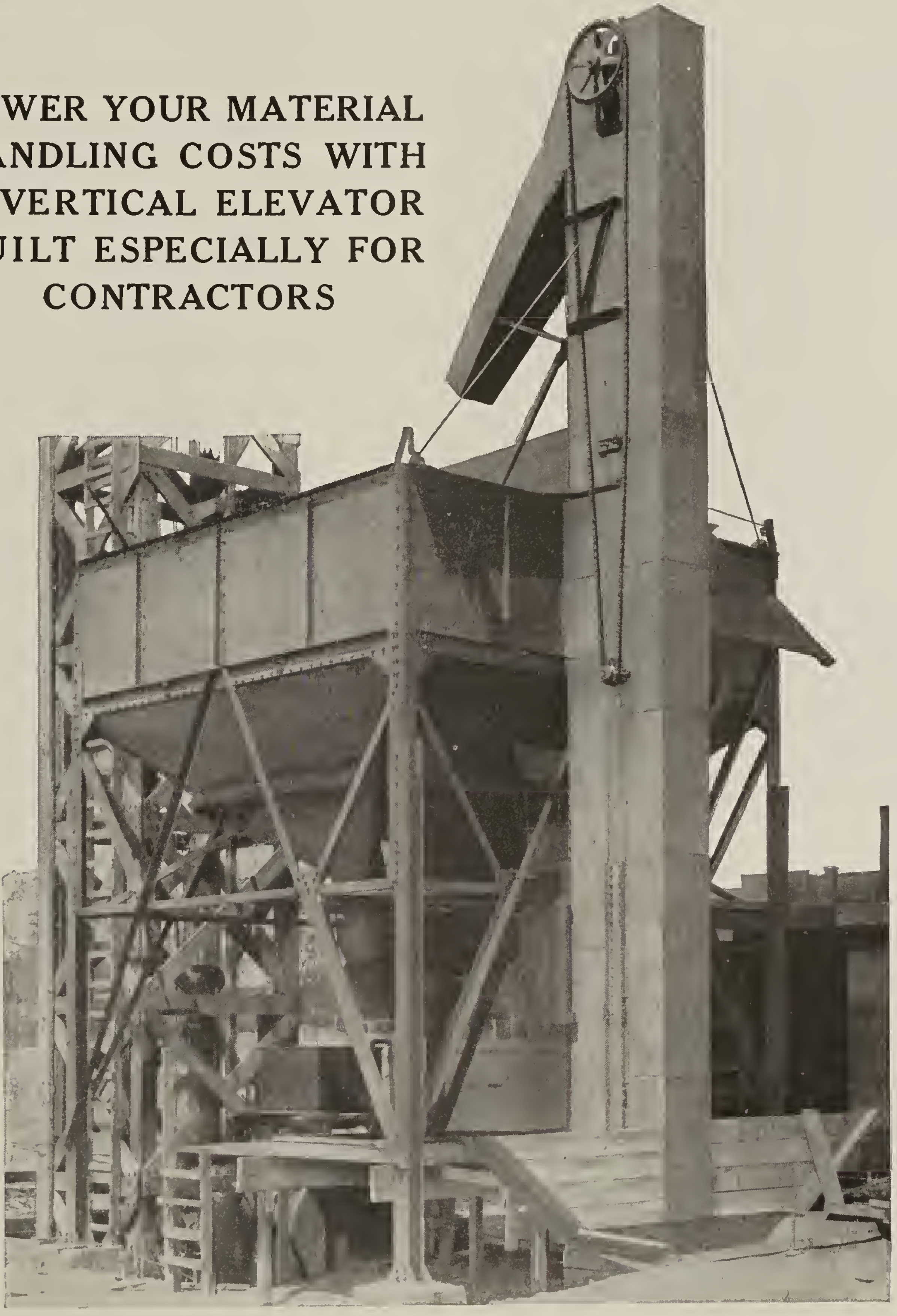
Rex Cement Elevators have been used successfully to reduce cement handling costs in central mixing plants. The required number of bags of cement are dumped into the hopper at ground level where they can be easily handled and the empty bags can be thrown into the bag cleaner. The gate in the hopper is then opened and the cement is elevated in about 15 seconds and discharged directly into the mixer batch hopper. The cost of cement handling labor is not only greatly reduced but operating conditions are improved because the enclosure of the elevator eliminates objectionable dust at the operating floor.

These elevators are especially designed for this work and should not be confused with ordinary elevators. They have been in actual use in central mixing plants and in cement mills, and have proved entirely satisfactory under these difficult working conditions.

REX CONTRACTORS ELEVATORS

Made by Chain Belt Company, Milwaukee

LOWER YOUR MATERIAL HANDLING COSTS WITH A VERTICAL ELEVATOR BUILT ESPECIALLY FOR CONTRACTORS

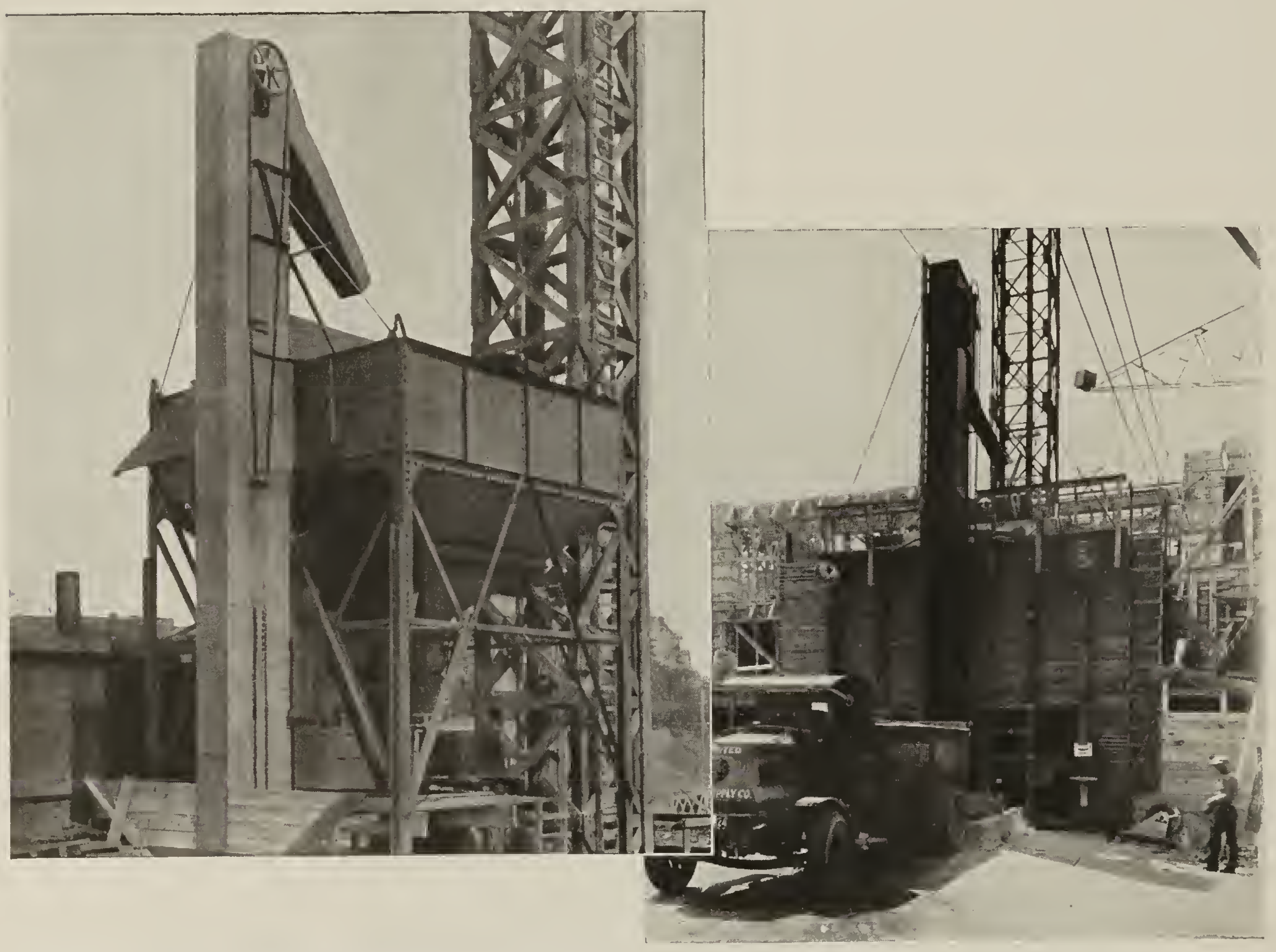


A new Rex portable elevator built especially for the construction industry. Fulfills the long felt need of an elevator which can be moved quickly and easily. The new Rex is light, strong, easy to handle, and may be purchased as a complete elevator ready to set up or without casing or hopper.

Note the many new features on the following pages and ask for the new elevator catalog for details and additional information.

REX CONTRACTORS ELEVATORS

Made by Chain Belt Company, Milwaukee.



This New Rex Vertical Contractors' Elevator has been especially designed for batch bin loading. It is of all steel construction and substantially built throughout to give long, continuous service. The design makes erection to any batch bin, either wood or steel, an easy matter; no timber work, cutting or fitting, is necessary. The complete elevator arrives on the job ready to be set up and put in operation at once. When certain parts, such as swivel discharge spout, loading hopper, or enclosing plates are not required these can be omitted with corresponding reductions in price. Rex Contractors' Elevators are built in sizes of suitable capacity from 7-S to 56-S. Special elevators of greater capacity can be furnished if required.

Adjustable Steel Frame is easily adapted to any size bin, is easy to set up, and allows hopper to be either in a pit or on ground level.

Steel Bushed Roller Chain especially designed for construction machinery — high carbon steel sidebars for strength, case hardened pins and bushings for resisting wear. Will not deteriorate or break suddenly like a belt.

Heavy Malleable Iron Buckets will not bend or get out of shape. Will outlast steel buckets many times. Rounded corners and bottoms prevent packing of wet sand.

Swivel Discharge Spout will distribute sand and stone in two compartment bin without mixing. Cannot jam or stick and is easily controlled from ground.

Steel Boot and Slidegate control flow of material and allow elevator to operate at maximum speed without jamming. Trucks are not held up for lack of capacity.

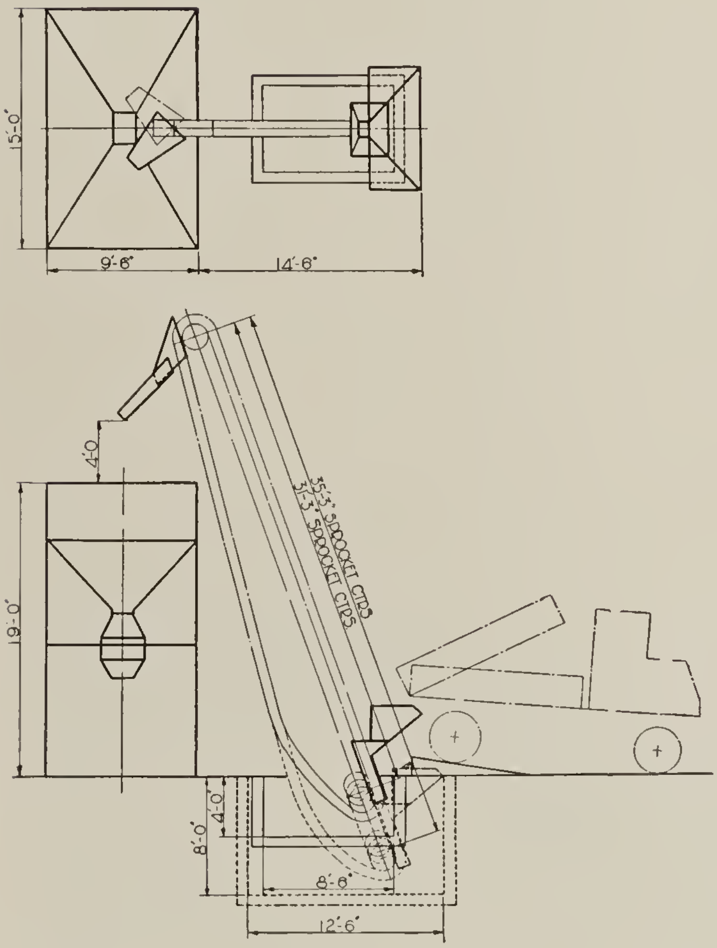
Steel Loading Hopper can be provided in 2 or 5 yard capacity to receive material from trucks, eliminating the necessity for building a timber hopper.

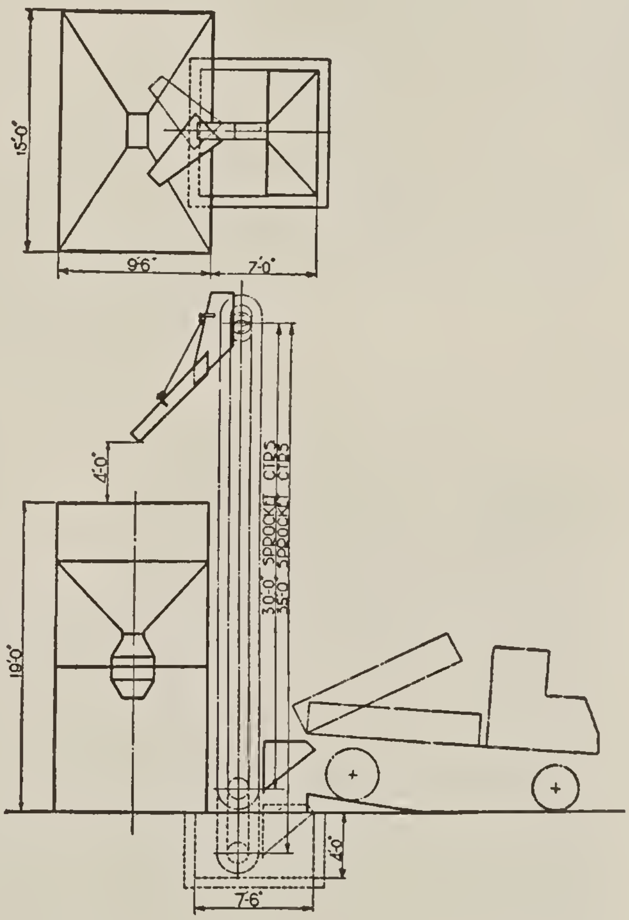
REX CONTRACTORS ELEVATORS

Made by Chain Belt Company, Milwaukee.

Capacities of the Rex Contractors' Elevators

Rex Contractors' "Thirty",	30 cu. yds. of loose material per hour
Rex Contractors' "Forty",	40 cu. yds. of loose material per hour
Rex Contractors' "Fifty",	50 cu. yds. of loose material per hour
Rex Contractors' "Seventy",	70 cu. yds. of loose material per hour


15'-0"
9'-8"
14'-6"
4'-0"
19'-0"
35'-3" SPROCKET CTRS
31'-3" SPROCKET CTRS
8'-0"
4'-0"
8'-6"
12'-6"


15'-0"
9'-6"
7'-0"
4'-0"
19'-0"
30'-0" SPROCKET CTRS
35'-0" SPROCKET CTRS
4'-0"
7'-6"

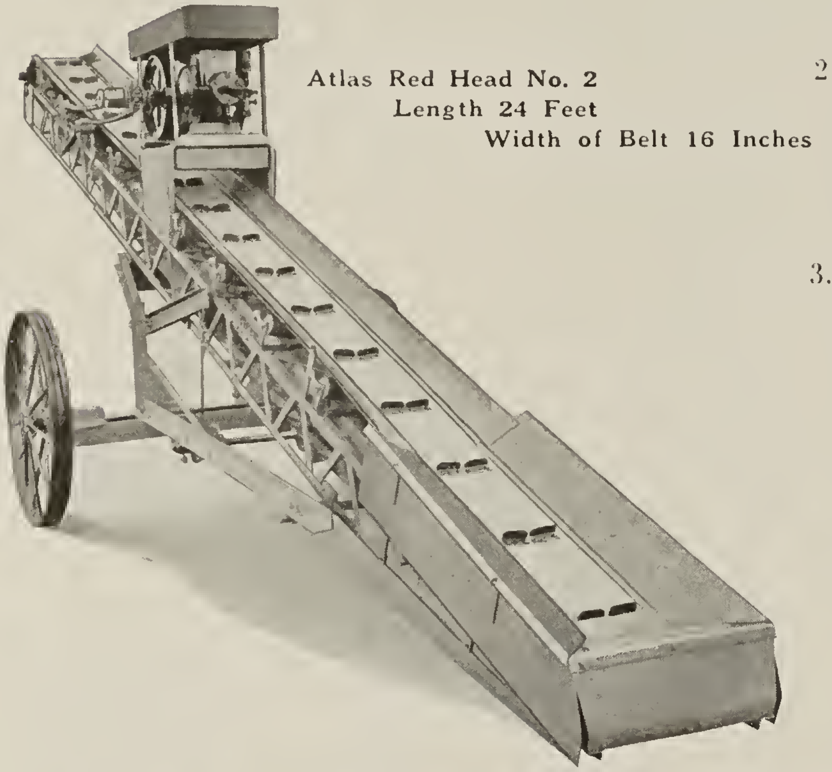
These elevators can be furnished in suitable heights for loading any size or height of bin. Give bin size, height, style, and make when ordering elevator, and specify whether a suitable drive for a gas engine or an electric motor is required.

This comparison between a Rex Vertical Contractors' Elevator and a typical inclined elevator shows the actual saving in ground area made possible by using the Rex Elevator. For ground level loading, the pit is not as deep nor as large, and in the exceptional case where a pit is undesirable the Rex Contractors' Elevator can be used with a much lower and more easily built ramp than is possible with the inclined elevator.

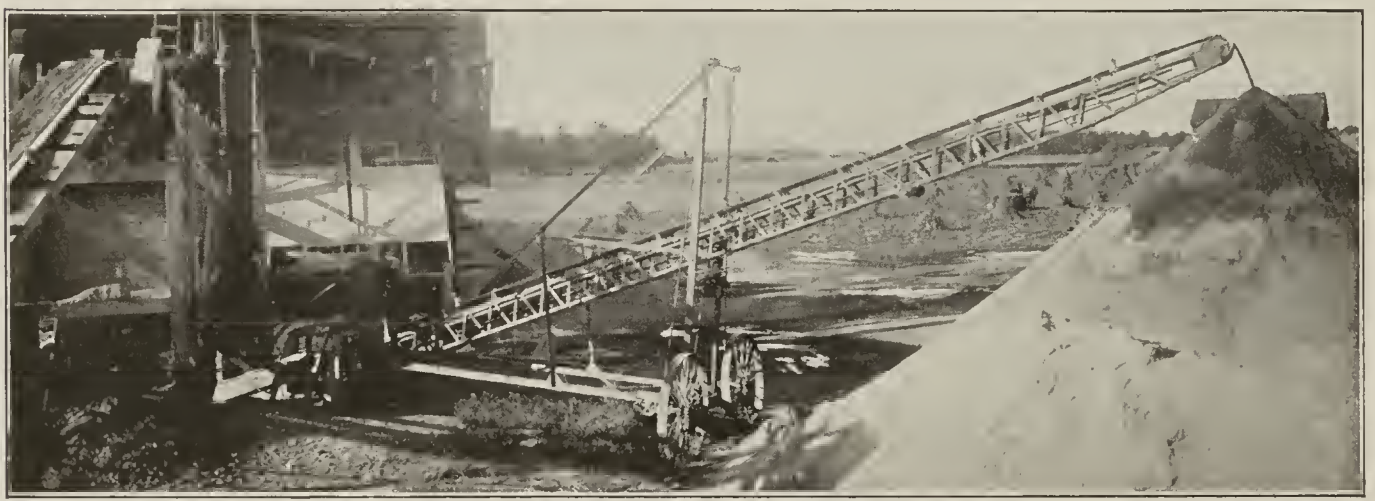
Atlas CONVEYORS

Manufactured by

ATLAS ENGINEERING COMPANY, CLINTONVILLE, WIS., U.S.A.



1. Atlas Conveyors built in lengths of 15′ to 102′ with 16″, 18″ or 24″ belt.
2. Red Head No. 2, 24′ centres, as shown fully equipped with 16″ belt, gas engine or electric motor drive, swivel wheel axle, steel or rubber tire wheels, the latter with roller bearings.
3. Frames: All conveyor frames are steel, trussed construction electrically welded giving perfect rigidity at all times and eliminating misalignment of belt due to frame warpage.
4. The equipment is flexible and adaptable to a varied number of uses such as illustrated. Ashes, boxes, bales, brick, tile, coal, coke, castings, cement, chips, crushed rock, clay, earth, fertilizer, grain, gravel, lime, mortar mixed concrete, ore, packages, plaster, potatoes, salt, sand, sugar beets.



The above photograph illustrates an Altas 87′ por table belt conveyor in operation. Note: swivel axle, standard on all Atlas Conveyors except type R. H. No. 1.

DISCHARGE HEIGHTS

Length of conveyor	15	18	21	24	27	30	33	36	39	42
666 20 Degrees	5′6″	6′6″	7′6″	8′6″	9′6″	10′6″	11′6″	12′6″	13′6″	14′9″
25 Degrees	6′9″	7′9″	9′	10′3″	11′6″	12′9″	14′	15′3″	16′6″	17′9″
30 Degrees	7′9″	9′0″	10′6″	12′	13′6″	15′	16′6″	18′	19′6″	21′
35 Degrees	9′0″	10′6″	12′	13′9″	15′9″	17′3″	19′	20′9″	22′6″	24′3″

Length of conveyor	45	48	51	54	57	60	63	66	69	72	75
666 20 Degrees	15′9″	16′9″	17′9″	18′9″	19′9″	20′9″	21′9″	22′9″	24′	25′	26′
25 Degrees	19′	20′3″	21′6″	22′9″	24′	25′3″	26′6″	27′9″	29′	30′6″	31′9″
30 Degrees	22′6″	24′	25′6″	27′	28′6″	30′	31′6″	33′	34′6″	36′	37′6″
35 Degrees	26′	27′9″	29′6″	31′3″	33′	34′9″	36′6″	38′3″	40′	41′9″	43′6″

Atlas CONVEYORS

5. Built in standard sectional units, head section, 7½′ tail section, 7½′ intermediate sections in intervals of 3′ with heavy locking connections making entire unit one piece. Easily lengthened by additional sections.

6. Carrier rolls are plain bearing, three troughing with grease cup or alemite lubrication, fool proof, spaced at 18″ at 6′ loading end and 3′ centers from there on.

7. Takeups: 8 to 12″ travel fully protected and always accessible.

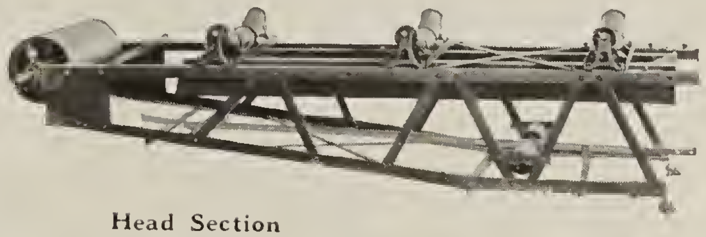
8. Belt: Standard rubber covered 4 ply, 28 oz. duck, ⅛ cover, 1/32 bottom.

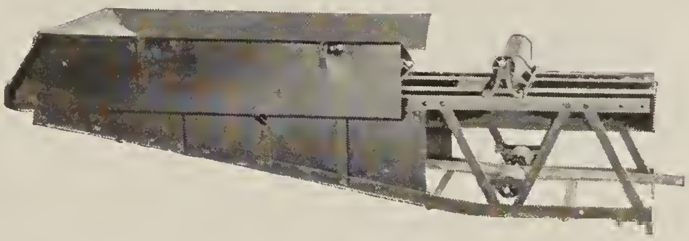
9. Gasoline engine or electric motor through reduction gear and clutch with gas engine, chain drive to head sprocket.

10. Head pulley: Steel crowned width of belt plus 2″ with sash cord wrapping.

11. Return: Belt fully covered with No. 16 gauge sheet rounded 8″ from edge.

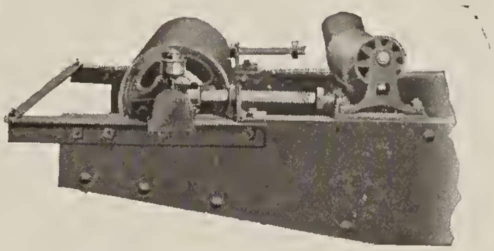
12. Hopper: Twice the width of belt, 6′ long, minimizing spillage, covering all moving parts at tail of conveyor.


Head Section


Tail Section with Hopper and Takeup Cover Plate

Load Idler

Return Idlers


Takeup Location

BELT DATA

Width of Belt	16″	18″	24″
Capacity, Tons Per Hr. ..	65	80	120
Above Figures Based on 200 F.P.M. Belt Speed			

FOR HANDLING WET CONCRETE

24″ Belt—280 F.P.M. Minimum Speed—
Capacity—1 Yd. Per Min.

SPECIFICATIONS

Width of Belt 18 inches.

Lgth. of Conveyor in ft...	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63	66	69	72	75	78	81	84	87	90	93	96	99	102
Weight, lbs.	825	954	1083	1212	1341	1470	1600	1728	1857	1986	2115	2244	2373	2500	2631	2760	2896	3030	3132	3300	3420	3580	3720	3860	4000	4130	4260	4410	4550	4674
Horse Power Motor	2	2	3	3	3	3	3	5	5	5	5	5	5	5	7½	7½	7½	7½	7½	10	10	10	10	10	10	10	10	15	15	115
Weight Motor, lbs........	200	200	250	250	250	250	250	275	275	275	275	275	275	275	471	471	471	471	471	506	506	506	506	506	506	506	506	644	644	644
Wt., lbs. drv. mch., gears, etc.	175	175	175	175	190	190	190	200	200	200	200	200	220	220	220	220	240	240	240	240	260	260	260	260	280	280	280	280	300	300

Width of Belt 24 inches.

Lgth. of Conveyor in ft...	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63	66	69	72	75	78	81	84	87	90	93	96	99	102
Weight, lbs.	875	1025	1175	1325	1475	1625	1775	1925	2075	2225	2375	2525	2675	2825	2975	3125	3290	3420	3600	3860	3920	4070	4230	4380	4550	4700	4850	5000	5150	5300
Horse Power Motor	2	3	3	3	3	3	5	5	5	5	5	7½	7½	7½	7½	10	10	10	10	10	15	15	15	15	15	15	15	15	15	15
Weight Motor, lbs........	200	250	250	250	250	250	275	275	275	275	275	471	471	471	471	506	506	506	506	506	644	644	644	644	644	644	644	644	644	644
Wt. lbs. drv. mch., gears, etc.	175	175	175	175	190	190	190	190	200	200	200	200	220	220	220	220	240	240	240	240	260	260	260	260	280	280	280	280	300	300

Trucks for Conveyors (length of Conveyor)	15 to 33 ft. inclusive	36 to 54 ft. inclusive	57 to 75 ft. inclusive	78 to 102 ft. inclusive
Size of Wheel	44x4 in.	48x5 in.	60x5 in.	(Special)
Weight of Truck complete	950	1050	1250	

All Weights Given are Approximate

PLYMOUTH GASOLINE AND DIESEL LOCOMOTIVES

PRODUCTS

Plymouth Gasoline Locomotives.
Plymouth Diesel Locomotives.

SIZES

Gasoline—2½, 3, 3½, 4, 4½, 5, 6, 7, 8, 10, 12, 14, 16, 20, 25, 30 and 50 ton.
Diesel—12, 15, 20, 25, 30, 40 and 60 ton.

GAUGES

Gasoline, 2½ to 4 ton 18″ to 56½″;
Gasoline, 4½ and 5 ton, 21½″ to 56½″;
Gasoline, 6 to 14 ton, 23⅝″ to 56½″;
Gasoline, 18 to 50 ton, 36″ to 56½″;
Diesel, 12 to 60 ton, 36″ to 56½″.

ADVANTAGES

In Plymouth Gasoline and Diesel Locomotives you get:
Low Purchase Cost.
Low Operating Cost.
Low Upkeep Cost.
Simplicity in Construction and Operation.
All Parts Easily Reached for Cleaning and Adjusting.
No Licensed Engineer Required.
Always Ready; No Firing-up, No Boiler Troubles, No "Stand by" Expense.
Equal Power, Forward or Backward.

ECONOMY

Plymouth Locomotives are cheaper to operate and maintain than locomotives using other sources of power. Many Plymouth owners report a saving of 50 per cent over steam or electrical haulage.

USED IN CONSTRUCTION WORK

For construction work, highways, dams, and bridges, Plymouth Locomotives have won great favor by moving big yardage in double quick time.

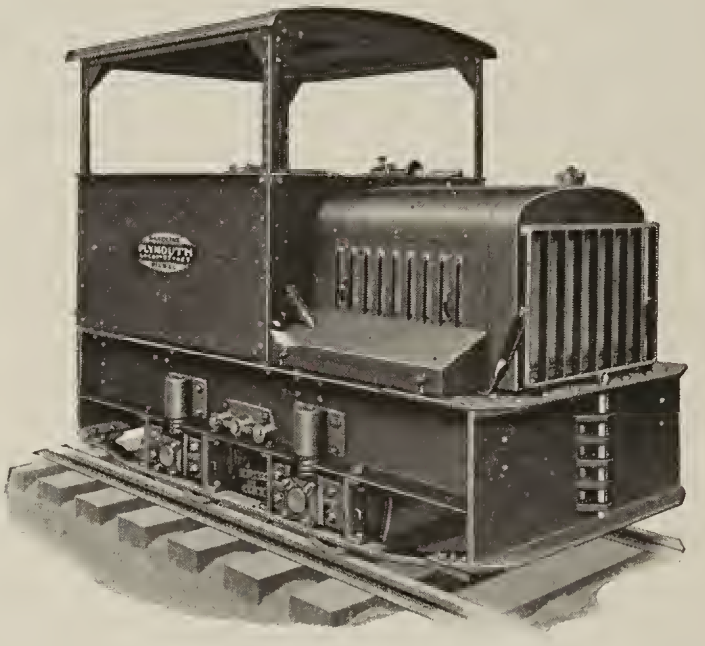
Plymouth's ability to make quick and accurate stops is appreciated by Contractors, especially in elevated work, where cars must be spotted exactly to the inch for pouring concrete.

USED IN OTHER FIELDS

Plymouth Locomotives are splendidly adapted to haulage in Quarrying, Sand and Gravel, Clay Plants, Logging, Coal and Metal Mining, Plantations and General Industrial Haulage and Switching. Special Bulletins, showing installation views in each of these fields, will be gladly sent on request.

CONSTRUCTION FEATURES

Heavy rigid Frame. Low center of gravity. Well balanced on springs. Rides rough track easily. Simple and substantial construction throughout. Greatest accessibility of parts. Engine powerful and rugged. Powerful and efficient brakes. Simple, positive acting sanders.



Model TL, 2½ Ton, 3-Speed, Gear Drive

The Model TL 2½ Ton Plymouth Gasoline Locomotive is offered as the most economical motive power for those having a light haulage problem. Its low price and absence of standby costs make it especially attractive.

The wheelbase and overall length have been kept to a minimum to give maximum efficiency when operated on rough tracks and around sharp curves. Built on a rugged frame to withstand hard usage, with engine, transmission, and reversing drive easily accessible and simple in assembly so they can easily be replaced or repaired in case of accident.

CONDENSED SPECIFICATIONS

Gauge—18 to 36 inches.

Speeds—2.4, 4.8 and 9.6 M. P. H.

Tractive Force—2490 lbs. at 2.4 M.P.H.

Draw Bar Pull—1665 lbs. at 2.4 M. P. H. (with sand); 1250 lbs. at 2.4 M. P. H. (without sand); 1250 lbs. at 4.8 M. P. H.; 625 lbs. at 9.6 M. P. H.

Wheel Base—34″, Length over all 8′ 9″.

Height—Over all 6′ 11″, over radiator 4′ 9″.

Engine—LeRoi Model CT, 4-cyl. 3⅜″ bore, 4½″ stroke, 20 H. P. at 1500 R. P. M.

Ignition—Eiseman High Tension Magneto with impulse coupling.

Carburetor—Zenith 1¼″.

Governor—Enclosed fly-ball type.

Cooling—Modine radiator, 16″ fan.

Clutch—Fuller 8″ Multiple disc.

Transmission—Sliding gear type, 3-speed, both forward and reverse.

Drive Chains—Heavy 1¾″ pitch, 1″ diam. by 1″ wide.

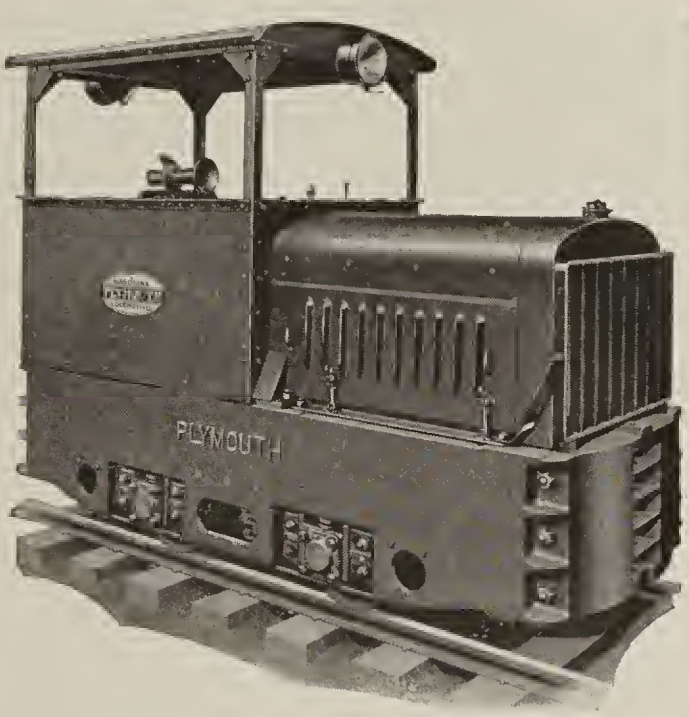
Wheels—Chilled 18″ diameter. 3¼″ thread.

Brakes—By hand lever to all four wheels.

Cab and Canopy—All steel construction.

Gasoline Consumption—5 to 7 gals. per 10 hours.

PLYMOUTH GASOLINE LOCOMOTIVES


Model RL, 3½ Ton, 4-Speed, Gear Drive

The Model RL 3½ Ton Plymouth Gasoline Locomotive meets the demand for a light weight, compact locomotive for light rails and narrow gauges. It combines low initial cost with low maintenance, simplicity of operation, and an efficient gear drive arranged to give four speeds in either direction. The locomotive is amply powered to give maximum haulage at the greatest practicable speeds; built on a rugged frame to withstand the shocks of hard usage; with a wheel base and overall length as short as possible to permit its use on short curves and in cramped places.

SPECIFICATIONS

Gauge—18 to 36 inches.

Speeds—2, 3.2, 6 and 9.6 M. P. H.

Tractive Force—5200 lbs. at 2 M.P.H.

Draw Bar Pull—2332 lbs. at 2 M. P. H. (with sand); 1750 lbs. at 3.2 M. P. H. (without sand); 1750 lbs. at 6 M. P. H.; 1245 lbs. at 9.6 M. P. H.

Wheel Base—34″. Length over all 8′ 9″.

Height—Over all 6′ 10½″, over radiator 4′ 9″.

Engine—Hercules Model "OX" 4-cyl. 4″ bore by 5″ stroke, 40 H. P. at 1500 R. P. M.

Ignition—Bosch high tension Magneto with impulse coupling.

Carburetor—Stromberg M-2.

Cooling—Modine radiator, 18″ fan.

Clutch—10″ Multiple Disc, dry plate.

Transmission—Sliding gear type, 4-speed, both forward and reverse.

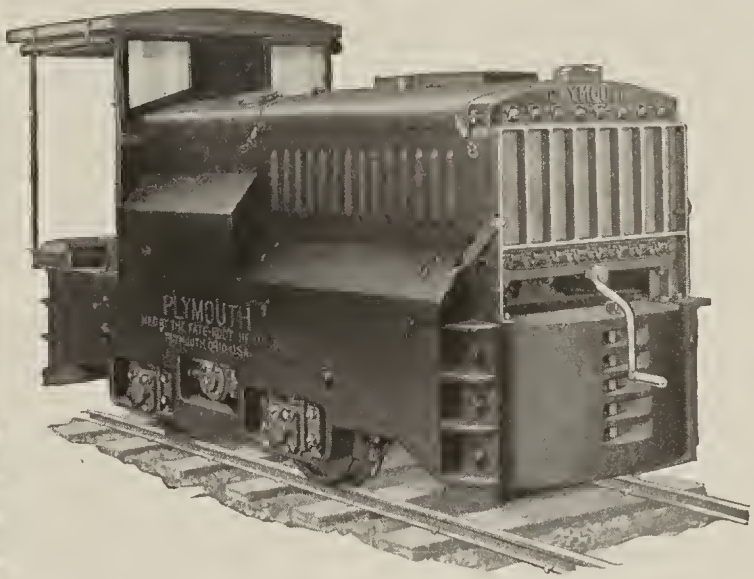
Drive Chains—Heavy 1¾″ pitch, 1″ diam. by 1″ wide.

Wheels—Chilled 18″ diameter, 3¼″ tread.

Brakes—By hand lever to all four wheels.

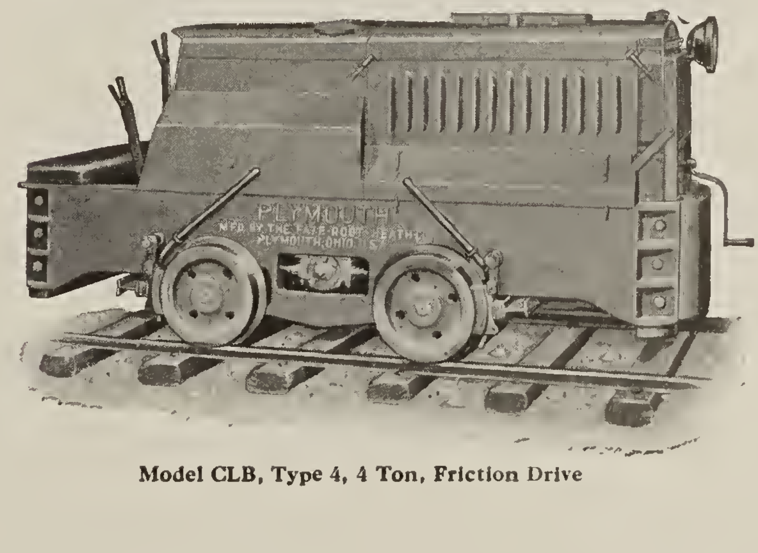
Cab and Canopy—All steel construction.

Gasoline Consumption—5 to 7 gals. per 10 hours.


Model CLB, Gasoline, Type 2, 4 Ton, Friction Drive

CONDENSED SPECIFICATIONS

Gauge—18 to 56½ inches.
Speeds—0 to 10 M. P. H.
Draw Bar Pull—1,600 lbs. at 5 M. P. H.; 800 lbs. at 10 M. P. H.
Wheel Base—39¾″. Length over all 130″.
Height—Over all, Type 2 with cab 72″; Type 4 (Mining) without cab 58″.
Engine—Buda model KTU, 4 cylinder, 4″ x 5¼″, 35 H.P. at 1200 R. P. M., with pump circulation and full force feed oiling system.
Ignition—Bosch high tension magneto with impulse coupling.
Carburetor—Stromberg M-2.
Governor—Pierce flyball type.
Cooling—Modine Sectional Core Radiator.
Transmission—23″ diam. metal friction drive disc to fibre-faced wheel 22⅛″ diam., with flexible telescopic coupling; drive chains from jack shaft to each axle; double width chains from friction wheel to jack shaft.
Wheels—Chilled, 18″ diam. 3¼″ tread.
Brakes—By hand lever to four wheels. Sand, by hand lever to four wheels.
Bearings—Hyatt Roller and New Departure Ball.
Lubrication—Alemite.
Gasoline Consumption—5 to 7 gals. per 10 hrs.
Starter, Lights and Horn—Furnished only as extra equipment.


Model CLB, Type 4, 4 Ton, Friction Drive

PLYMOUTH GASOLINE LOCOMOTIVES

PLYMOUTH 4 SPEED GEAR DRIVE GASOLINE LOCOMOTIVES

The Locomotives With the Remarkable Transmission

No part of an Industrial Locomotive is of more vital importance than its transmission. No matter how good or powerful the Engine or Power Plant may be, all power must be transmitted through the Transmission. It can be either the strongest or weakest link.

The gears used in Plymouth Transmissions are exceptionally large and massive. The driving gears are the only ones that are in mesh. No jack-shaft required; no jaw clutches. Driving sprockets on same horizontal plane with axles; only two short drive chains—both extra heavy. All ball bearings inside of gear case, from which they are lubricated.

Thousands of Plymouths in actual use have proved that the design and construction are correct.

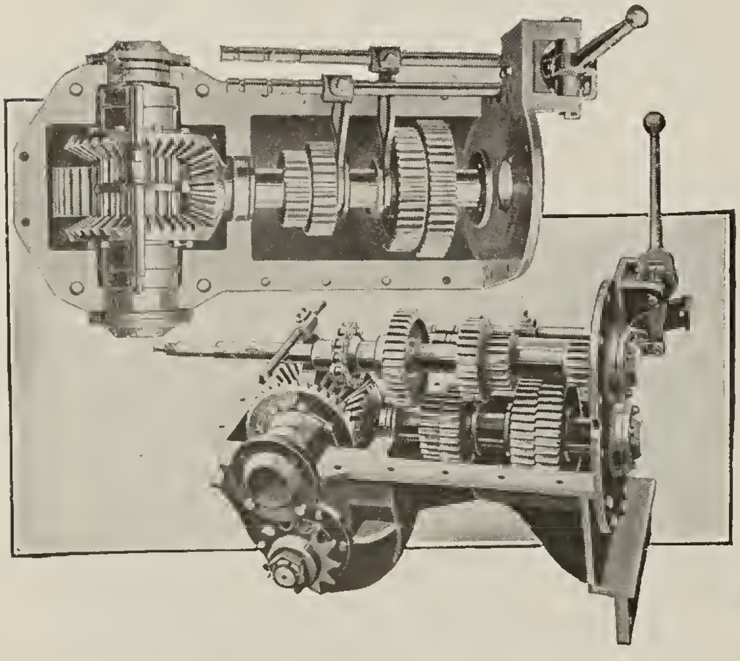
Other Exceptional Features

Four Wheel Brakes, lever type, shoes engaging both tread and flange, giving maximum braking power.

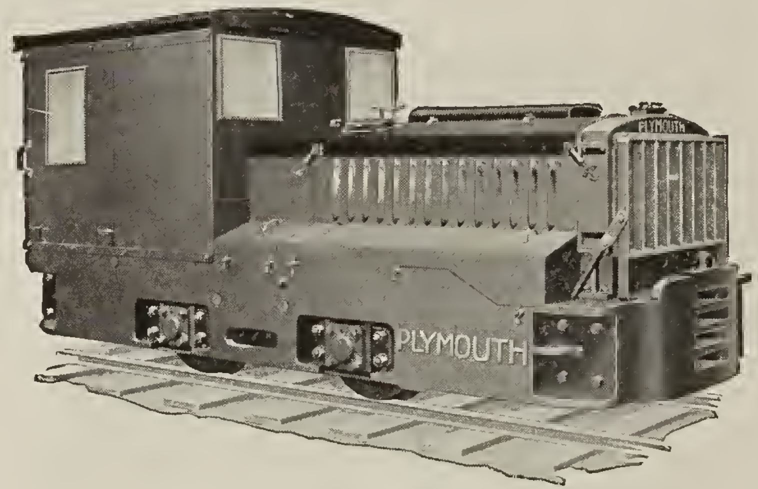
Sand boxes located high behind engine to keep sand warm and dry. Sand Pipes hug the wheels, placing sand directly on rails.

Axle end thrust taken by Bronze Thrust Plates placed in axle boxing caps, which provide perfect lubrication.

Cab and Canopy (of all steel construction) are easily disassembled. Cabs have side entrance, as well as rear, affording greater safety



Style of Transmission Used in 5, 7, 8 and 10-Ton Plymouth Gear Drive Locomotives. All Gears are Extra Large and Massive.



Model FLB, Type 2, 5 Ton, 4-Speed, Gear Drive

CONDENSED SPECIFICATIONS

Gauge—21½ to 56½ inches.

Speeds—2⅔, 4, 8, and 12 M. P. H.

Tractive Force—3754 lbs. at 2⅔ M. P. H.

Draw Bar Pull—3,333 lbs. at 2⅔ M. P. H. (with sand); 2,500 lbs. at 4 M. P. H.; 1,307 lbs. at 8 M. P. H.; 872 lbs. at 12 M. P. H.

Wheel Base—38$\frac{5}{16}$″. Length over all 132″.

Height—(Over all) Type 2 with cab 65″, type 4 without cab (Mining) 46″.

Engine—Buda Model KTU, 4 cylinder 4″ x 5¼″, 35 H. P. at 1200 R. P. M.

Ignition—Bosch high tension magneto.

Carburetor—Stromberg M-2.

Air Cleaner—United, Centrifugal Action, Automatic.

Governor—Pierce flyball type.

Cooling—Modine Sectional Core Radiator.

Clutch—Modified Twin Disc with combined clutch—retarding and auxiliary brake.

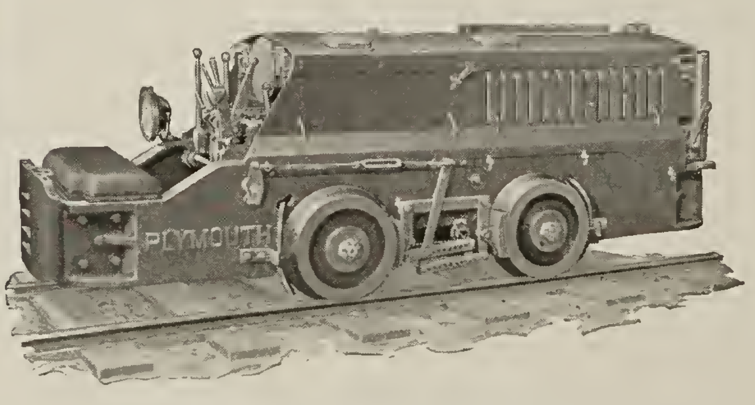
Transmission—Sliding gear type, 4 speed, both forward and reverse. Massive final driving gear housed in gear case. All gears large diameter with faces 1¾, 2 and 2⅞″ wide.

Wheels—Rolled steel 18″ diam., 3½″ tread.

Brakes—By hand lever to four wheels. Sand, by hand lever to four wheels, with agitating valve.

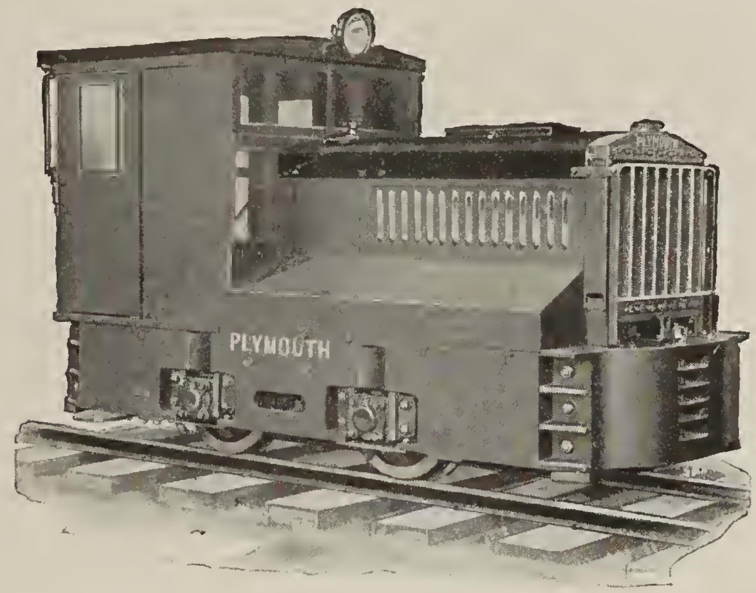
Gasoline Consumption—5 to 7 gals. per 10 hrs.

Starter, Lights and Horn—Furnished only as extra equipment.



Model FLB, Type 4, 5 Ton, 4-Speed, Gear Drive

PLYMOUTH GASOLINE LOCOMOTIVES



Model DLB and DLC, Type 6, 8 Ton, 4-Speed, Gear Drive

SPECIFICATIONS

Gauge—23⅝ to 56½ inches.

Speeds—2½, 4, 8, and 12 M. P. H.

Tractive Force—7560 lbs. at 2½ M. P. H.

Draw Bar Pull—5,333 lbs. at 2½ M. P. H. (with sand); 4,000 lbs. at 4 M. P. H. (without sand); 2,354 lbs. at 8 M. P. H.; 1,600 lbs. at 12 M. P. H.

Wheel Base—45$\frac{3}{16}$″. Length over all 144″.

Height—(Over all) Type 6 with cab 84″; Type 2 with cab 72″; Type 4 without cab (Mining) 65½″.

Engine, DLB—Buda Model FRB, 4 cylinder, 5½″ x 6″, heavy duty type, 63 H. P. at 900 R. P. M.

Engine, DLC—Climax Model TU, 4 cylinder, 5½″ x 7″, heavy duty type, 63 H. P. at 900 R. P. M.

Ignition—Bosch high tension magneto with impulse coupling.

Starter—Leece-Neville 12 volt with Willard storage battery.

Generator—Leece-Neville 12 volt.

Carburetor—Stromberg M-4.

Air Cleaner—United, Centrifugal Action, Automatic.

Governor—Built-in flyball type.

Cooling—Modine Sectional Core Radiator.

Clutch—Multiple disc, dry plate, foot operated, 9 driving discs.

Transmission—Sliding gear type, 4 speed, both forward and reverse, massive final driving gear housed in gear case. All gears of large diameter with faces 2, 2¼ and 4″ wide.

Drive Chains—Heavy 2″ pitch 1⅛″ diam., by 1¼″ wide.

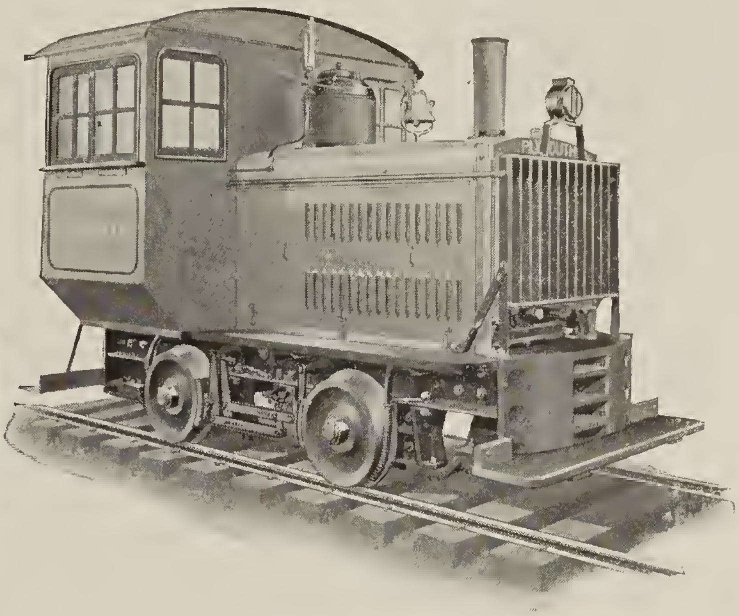
Wheels—Rolled steel, 24″ diam., 3½″ tread.

Brakes—Lever type to four wheels, shoes engaging both tread and flange. Sand, by hand lever to four wheels, with agitating valve.

Gasoline Consumption—14 to 16 gals. per 10 hrs.

Lights—Electric, 1 in front, 1 in rear, 1 in cab.

Cab and Canopy—All steel construction, easily dissembled. Cab has side as well as rear entrance, affording greater safety.



Model JLA, 12 Ton, 4-Speed

SPECIFICATIONS

Gauge—23⅝ to 56½ inches.

Speeds—(*Standard*)—2½, 4, 8¼ and 13½ M. P. H.
(*Special*)—3½, 5½, 11 and 18 M. P. H.

Tractive Force—12,000 lbs. at 2½ M. P. H.
8,570 lbs. at 3½ M. P. H.

Draw Bar Pull—(*Standard Speeds*)—8,000 lbs. at 2½ M. P. H. (with sand); 6,000 lbs. at 4 M.P.H. (without sand); 3,636 lbs. at 8¼ M. P. H.; 2,220 lbs. at 13½ M. P. H.
(*Special Speeds*)—8,000 lbs. at 3½ M.P.H. (with sand); 6,000 lbs. at 3½ M.P.H. (without sand); 5,454 lbs. at 5½ M.P.H.; 2,727 lbs. at 11 M.P.H.; 1,666 lbs. at 18 M.P.H.

Wheel Base—63″. Length over bumpers 13 ft.

Height—(Over all) 9′ 9¾″.

Frame—All steel construction.

Engine—Climax Model RI4, Blue Streak, 4 cylinder 6″ x 7″, heavy duty type, 100 H. P. at 1,000 R. P. M.

Ignition—Bosch high tension magneto with impulse coupling.

Starter—Leece-Neville 12 volt with Willard storage battery.

Generator—Leece-Neville 12 volt.

Carburetor—Stromberg M-5.

Governor—Built-in, flyball type.

Cooling—Modine sectional core radiator.

Clutch—Plymouth Double Disc Dry Plate.

Transmission—Sliding gear type, 4 speed, both forward and reverse, massive final driving gear housed in gear case. All gears of large diameter with faces 2″, 4″ and 5¾″ wide.

Drive Chains—Heavy 2½″ pitch, 1$\frac{9}{16}$″ diam., 1½″ wide.

Wheels—Rolled steel, 24″ diameter, 3½″ tread.

Brakes—Lever type to all 4 wheels, shoes engaging both tread and flange.

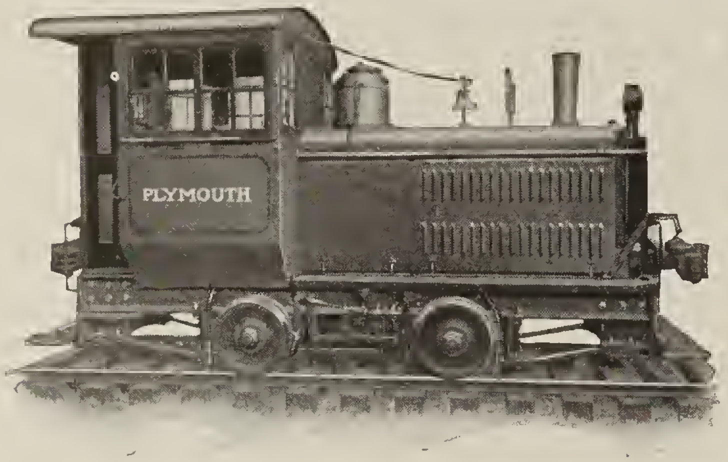
Sanders—Hand operated to all 4 wheels, with agitating valve.

Gasoline Consumption—2½ to 3 gals. per hour.

Lights—Electric, 1 in front, 1 in rear, 1 in cab.

Cab and Canopy—All steel construction. Cab has door on each side, and sliding windows.

PLYMOUTH GASOLINE LOCOMOTIVES



Model JLB, 12, 14 and 16 Ton; 4-Speed, Gear Drive

SPECIFICATIONS

Gauge—23⅝ to 56½ inches.

Speeds—(*Standard*) 2½, 4, 8¼, and 13½ M.P.H.
(*Special*) 3½, 5, 11 and 18 M. P. H.

Tractive Force—12 and 14 Ton, 15,000 lbs. — 16 Ton, 16,320 lbs. at 2½ M.P.H.
12 and 14 Ton, 10,714 lbs. — 16 Ton, 11,657 lbs. at 3½ M.P.H.

Draw Bar Pull—In pounds.

Standard Speeds JBL	12 Ton	14 Ton	16 Ton
At 2½ M.P.H. on dry rail	6,000	7,000	8,000
At 2½ M.P.H. with sand	8,000	9,333	10,666
At 4 M.P.H. on dry rail	6,000	7,000	8,000
At 8¼ M.P.H. on dry rail	4,545	4,545	4,945
At 13½ M.P.H. on dry rail	2,777	2,777	3,022

Wheel Base—63″. Length over bumpers 16 ft.

Height—(Over all) 9′ 9¾″.

Frame—All steel construction.

Engine, 12 and 14 Ton—Buda JV6, 6-cyl., 5¾″ x 7¼″, 125 H.P. at 1,000 R.P.M.

Engine, 16 Ton—Buda JV6, 6-cyl., 6″ x 7¼″, 136 H.P. at 1,000 R.P.M.

Ignition—Bosch high tension magneto with impulse coupling.

Starter—Leece-Neville 12 volt with Willard storage battery.

Generator—Leece-Neville 12 volt.

Carburetor—Stromberg M-5.

Cooling—Modine sectional core radiator.

Clutch—Plymouth Multiple Disc Dry Plate.

Transmission—Sliding gear type, 4 speed, both forward and reverse, massive final driving gear housed in gear case. Gears alloy steel, cut and hardened, with faces 2″ to 4″, diameter 4¾″ to 18½″.

Drive Chains—Heavy 2½″ pitch, 1 9/16″ diam., 1½″ wide.

Wheels—Rolled steel, 24″ diameter, 3½″ tread.

Axles—Alloy steel, heat treated, 5⅛″ diameter.

Brakes—Lever type to all 4 wheels, shoes engaging both tread and flange.

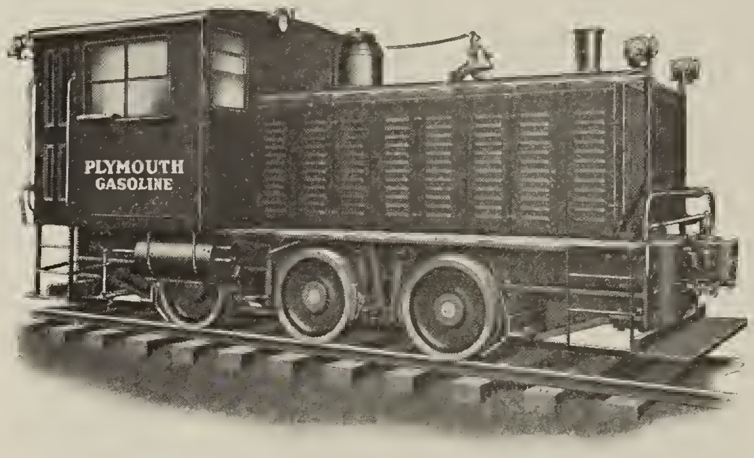
Sanders—Hand operated to all 4 wheels; air sanders when equipped with air brakes.

Couplers—Link and Pin type, or Automatic.

Springs—Semi-Elliptic type, one spring over each boxing. Rear springs cross equalized.

Lights—Electric, 1 in front, 1 in rear, 1 on instrument board.

Cab and Canopy—All steel construction. Cab has door on each side, and sliding windows.



Model WLG, 20, 25 and 30 Ton, 6 Wheel, 4-Speed, Gear Drive

SPECIFICATIONS

Gauge—30 to 56½ inches.

Speeds—(*Standard*)—2.6, 5.6, 9.7 and 15.6 M.P.H.
(*Special*)—2.6, 5.6, 10.9 and 23.4 M.P.H.

Tractive Force—20 Ton, 17,650 lbs.—25 Ton, 18,500 lbs. —30 Ton, 20,750 lbs. at 2.6 M.P.H.

Draw Bar Pull—In pounds.

Standard Speeds WLG	20 Ton	25 Ton	30 Ton
At 2.6 M.P.H. on dry rail	12,000	15,000	18,000
At 2.6 M.P.H. with sand	13,333	16,666	20,000
At 5.6 M.P.H. on dry rail	8,200	9,040	9,850
At 9.7 M.P.H. on dry rail	4,730	5,210	5,700
At 15.6 M.P.H. on dry rail	2,940	3,240	5,010

Wheel Base—109″. Length over bumpers 20′6″.

Height—(Over all) 10′ 6″.

Frame—All steel construction.

Engine—20 Ton, Climax Blue Streak, 6-cyl., 6″ x 7″, 150 H.P. at 1,000 R.P.M.

25 Ton, Le Roi, 6-cyl., 6½″ x 7″, 165 H.P. at 1,000 R.P.M.

30 Ton, Le Roi, 6-cyl., 6¾″ x 7″, 180 H.P. at 1,000 R.P.M.

Ignition—Bosch high tension dual system (magneto and battery).

Starter—Leece-Neville 12 volt with Willard storage battery.

Generator—Leece-Neville 12 volt.

Carburetor—Stromberg. Two M4.

Air Cleaner—United.

Governor—Built-in, flyball type.

Cooling—Modine sectional core radiator.

Clutch—Plymouth, dry plate, 6 facings, 14½″ outside diameter, 8½″ inside diameter.

Transmission—Sliding gear type, 4 speed, both forward and reverse. Massive final driving gear housed in gear case. Gears alloy steel, cut and hardened, with faces 2½″ to 5″, diameter 6½″ to 28½″.

Drive Chains—Heavy 2½″ pitch, 1 9/16″ diameter, 1½″ wide.

Wheels—Rolled steel, 33″ diameter, 4⅛″ tread.

Axles—Alloy steel, heat treated, 6½″ diameter.

Brakes—Air operated to all 4 wheels, shoes engaging both tread and flange. Auxiliary hand brake. Sanders air operated.

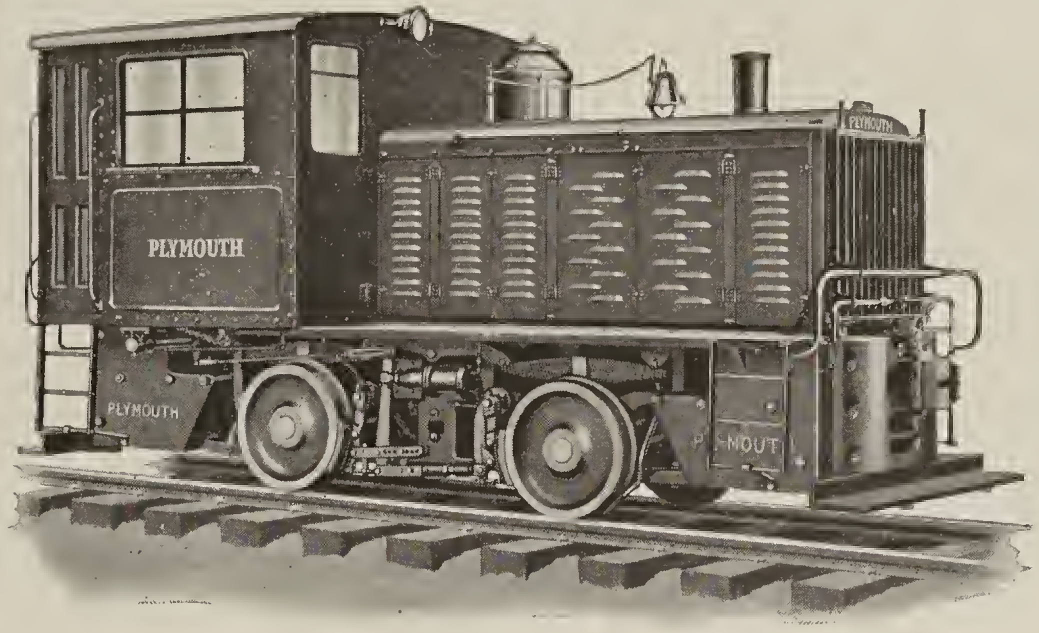
Couplers—Link and Pin type, or automatic.

Springs—Semi-Elliptic type, 3 point suspension, with side and cross equalizers.

Lights—Electric, 1 in front, 1 in rear, 2 in cab.

Cab and Canopy—All steel construction. Cab has door on each side, and sliding windows.

PLYMOUTH GASOLINE LOCOMOTIVES



Model ML, 20, 25 and 30 Ton, 4-Speed, Gear Drive

THE Model ML6 20, 25 and 30-Ton and Model ML8 30-Ton Plymouth Gasoline Locomotives are especially adapted for industrial haulage, heavy construction work, quarries, sand and gravel plants, logging and plantations.

The ML8 30 Ton, equipped with Le Roi 8 cylinder V type engine, developing 233 H.P. at 1,000 R.P.M., is an exceptionally powerful Locomotive where speed, as well as heavy loads, is an important factor.

The Frame is a patented bar-steel type of special construction with equalized semi-elliptic springs and the Locomotive will ride the roughest track with ease.

A special feature of this spring suspension is that the Locomotive can be had with side equalization and cross equalizations giving a true 3-point suspension. If so desired, it may be used without the side equalizers, using the cross equalizers only. All changes in equalization can be easily made in the field, thereby giving the owner much leeway in selecting the springs best suited to his work. These springs are long and flexible, being 48″ long and 4½″ wide.

The air compressor on all ML Models is built in the engine and runs off the crank shaft, which eliminates a separate air compressor drive. These Models are equipped with two large 12-volt starters, new type manifolding, and many other improvements giving greater efficiency and durability.

SPECIFICATIONS

Gauge—36″ to 56½″ inclusive. Wheels outside of frame for 56½″ gauge; inside of frame for other gauges.

Speeds—(*Standard*)—2.6, 5.6, 9.7 and 15.6 M.P.H.
(*Special*)—2.6, 5.6, 10.9 and 23.4 M.P.H.

Tractive Force—All ML6, 20,192 lbs. ML8, 26,922 lbs. at 2.6 M.P.H.

Draw Bar Pull—In lbs.

ML6-20 Ton	ML6-25 Ton	ML6-30 Ton	ML8-30 Ton
2.6 M.P.H. — Dry Rail			
10,000	12,500	15,000	15,000
2.6 M.P.H. — Sanded Rail			
13,333	16,666	20,000	20,000
5.6 M.P.H. — Dry Rail			
9,373	9,373	9,373	12,497
9.7 M.P.H. —			
5,412	5,412	5,412	7,216
15.6 M.P.H. —			
3,365	3,365	3,365	4,488
10.9 M.P.H. — Special Speed			
4,816	4,816	4,816	6,421
23.4 M.P.H.— Special Speed			
2,244	2,244	2,244	2,992

Wheel Base—83½″. Length over bumpers 19′0″.

Height—(Over all) 10′6″.

Frame—All steel construction.

Engine—20, 25 and 30 Ton—Le Roi, 6-cylinder, 6¾″ x 7″, 175 H.P. at 1,000 R.P.M.
30 Ton—Le Roi 8-cylinder, V type, 6¾″ x 7″, 233 H.P. at 1,000 R.P.M.

Ignition—6-cylinder—Bosch high tension dual system (Magneto and battery).
8-cylinder—Two dual spark Bosch Magnetos are used. 64 cu. ft. air compressors built into each engine.

Starters—Two powerful Leece-Neville 12 volt, with Williard storage battery.

Generator—Leece-Neville 12 volt.

Carburetor—Stromberg.

Air Cleaner—AC on 6-cyl., Pomona on 8 cyl.

Governor—Built-in flyball type.

Cooling—Modine sectional core radiator.

Clutch—Plymouth multiple disc, dry plate.

Transmission—Sliding gear type, 4 speed, both forward and reverse. Massive final driving gear housed in gear case. Gears alloy steel, cut and hardened, with faces 2½″ to 5″, diameter 6½″ to 28½″. All bearings ball or Timken roller.

Drive Chains—2½″ pitch of extra strong design.

Wheels—Rolled steel, 33″ diameter, 4⅛″ tread.

Axles—Alloy steel, heat treated, 6½″ diameter. Timken roller bearings in dust proof boxings.

Brakes—Westinghouse Straight or Straight and Automatic Air, shoes engaging both tread and flange. Hand brake for emergencies. Air Sanders.

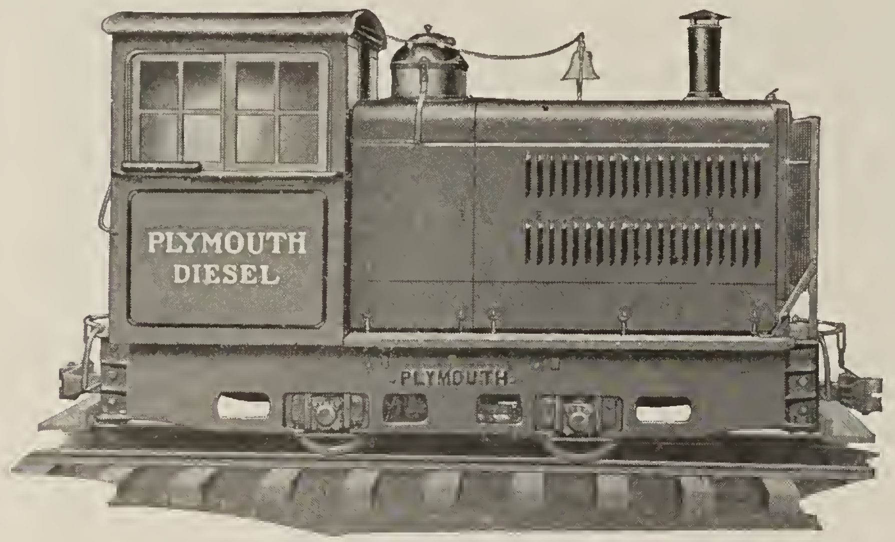
Couplers—Link and Pin type, or automatic.

Springs—Semi-elliptic, 48″ long, 4½″ wide, side and cross equalized.

Lights—Electric, 1 in front, 1 in rear, 2 in cab.

Cab and Canopy—All steel construction. Cab has door on each side, and sliding windows.

PLYMOUTH DIESEL LOCOMOTIVES



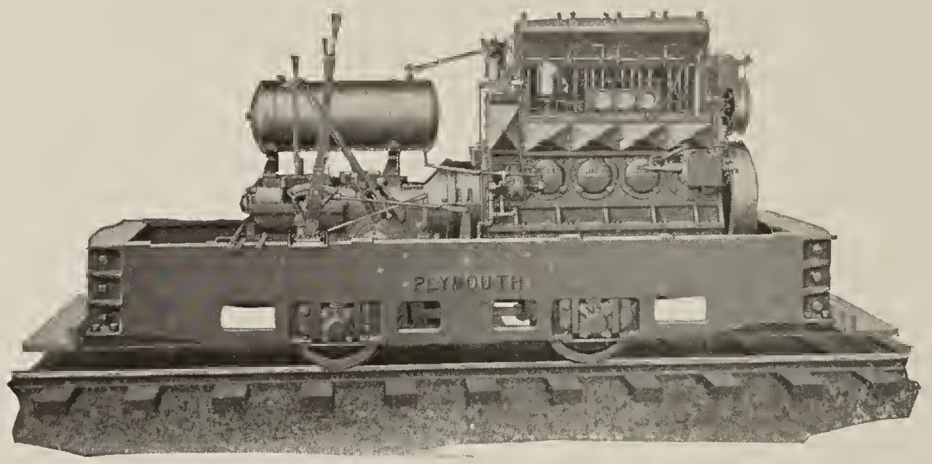
Model OL, 12 Ton, 4 Speed, Gear Drive

WITH thousands of Plymouth Gasoline Locomotives operating in all parts of the United States and foreign countries, meeting with general favor everywhere for their performance and economy, we take pleasure in offering what is believed to be the first tested and perfected Diesel-powered, gear-driven locomotive built in America.

A DIESEL Engine operates more efficiently, uses a cheaper grade of fuel and consumes less fuel per horse power hour than any other type of engine.

The saving in fuel cost is the greatest advantage of Diesel power, and where the locomotive is used extensively the saving per hour will soon make up the additional initial cost of the locomotive.

Plymouth Diesel Locomotives are made in a full range of sizes from 12 to 60 tons.



Partial Assembly View of Model OL, 12 Ton

SPECIFICATIONS

Gauge—23⅝ to 56½ inches.

Speeds—2½, 4, 8¼ and 13½ M. P. H.

Draw Bar Pull—At 2½ M. P. H. with sand 8,000 lbs.; without sand 6,000 lbs.; at 4 M. P. H. 6,000 lbs.; at 8¼ M. P. H., 3,000 lbs.; at 13½ M. P. H. 1,820 lbs.

Wheel Base—63″. Length over bumpers, 15′ 5″.

Height—Over all, 9′ 6″.

Frame—Cast steel construction.

Engine—Atlas-Imperial Diesel, 4 cylinder, 6½″ bore x 8½″ stroke, with full force feed oiling system, 77 H. P. at 650 R. P. M.

Auxiliary Air Compressor and Starter—Atlas-Imperial combined gasoline engine air compressor.

Air Cleaner—United.

Cooling—Modine Sectional Core Radiator.

Clutch—Plymouth Multiple Disc Dry Plate.

Transmission—Plymouth standard sliding gear type, 4 speeds both forward and reverse.

Gears—Alloy steel, cut and hardened.

Axles—Alloy steel, heat treated.

Wheels—Rolled steel, 24″ diameter.

Brakes—Lever type on all 4 wheels.

Sanders—Hand operated to all 4 wheels. Sand carried in sand dome.

Couplers—Pockets in bumpers for Link and Pin.

Fuel Tank—Pressure feed, 50 gallons capacity.

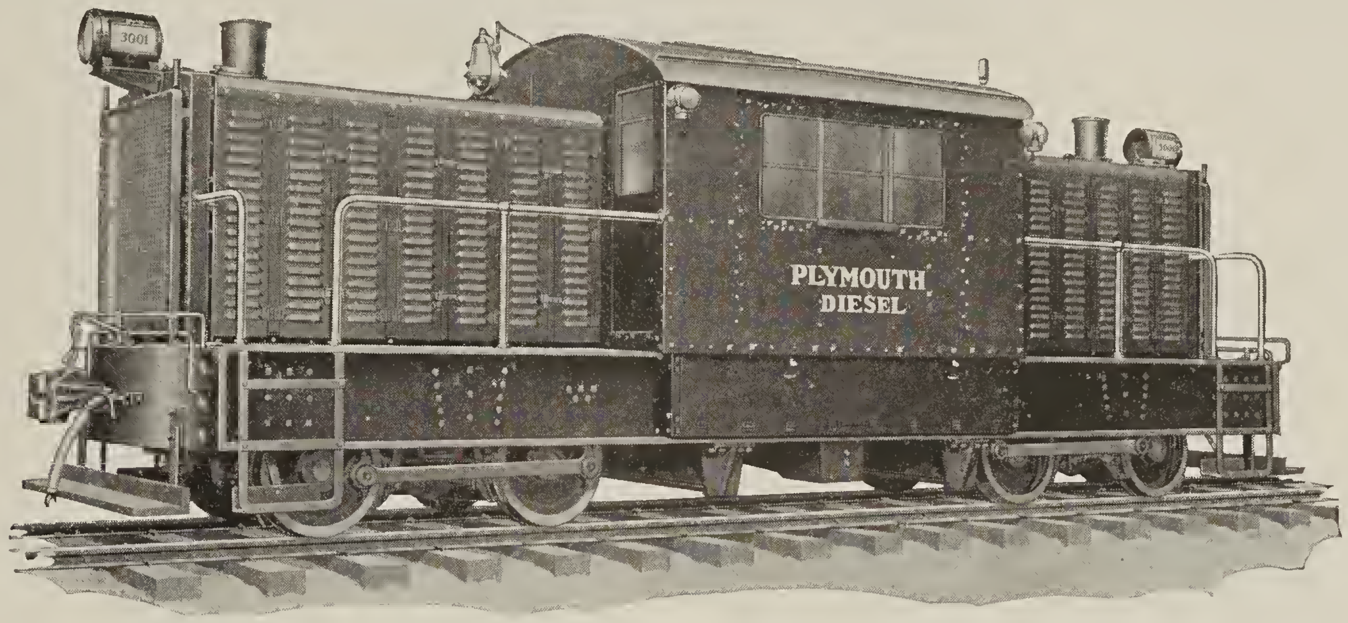
Fuel Consumption—Per hour, 2½ to 3½ gallons of fuel oil.

EXTRAS

Lights—With American Bosch 6 volt generator and Willard storage battery.

Couplers—Half, three-quarter or full automatic.

PLYMOUTH DIESEL LOCOMOTIVES



Model XL, 60 Ton Diesel, 4-Speed, Gear Drive. A similar model, XLG 50 Ton Gasoline Locomotive can also be furnished. Ask for Bulletin A-18.

THE MODEL XL 60 Ton Plymouth Diesel Locomotive is the crowning achievement in industrial locomotive development.

It is especially adapted for short line railroad haulage with speeds up to 36 miles per hour, switching, general industrial haulage, quarries, sand and gravel plants, logging, mining, construction work, etc. Equipped with a powerful, 8-cylinder Winton Diesel engine, and rugged 4-speed transmission, this Locomotive, we believe, is the most efficient haulage unit anywhere near its weight on the market.

Built with two four-wheel trucks, it will negotiate sharp curves and rough track.

CONDENSED SPECIFICATIONS

Gauge—Any gauge 36″ to 56½″.

Speeds—*Standard*—3, 6, 12 and 24 M.P.H. at engine speed of 700 R.P.M.
Special—4½, 9, 18 and 36 M.P.H. at engine speed of 700 R.P.M.

Tractive Force—*Standard* speeds, low gear, 37,188 lbs.
Special speeds, low gear, 24,792 lbs.

Draw Bar Pull—*Standard* speeds, 3 M.P.H. with sanded rail, 37,188 lbs. Without sand 30,000 lbs.; at 6 M.P.H. 18,594 lbs.; 12 M.P.H. 9,297 lbs.; 24 M.P.H. 4,649 lbs.
Special speeds, 4½ M.P.H. 24,792 lbs.; at 9 M.P.H. 12,396 lbs.; 18 M.P.H. 6,198 lbs.; 36 M.P.H. 3,099 lbs.

Wheel Base—Truck wheel base 66″. Center to center of trucks 21′ 0″; minimum radius of curve—60′ 0″.

Length—Over couplers—37′ 0″.

Height—Over cab 11′ 8″.

Width—Over frame 9′ 0″. Over cab roof 11′ 8″. Over marker lamps 11′ 3¾″ for 56½″ ga.: 36″ ga. 12″ less than for the 56½″ ga., or the same width of cab if clearance permits.

Frame—24″ steel girder beam sides, cast steel bumpers and bolster beams.

Trucks—Main frame of one piece steel casting, axles fully equalized. Timken bearings on driving axles. Hyatt bearings on driven axle, Timken and Hyatt bearings on pinion shaft, bevel gears and pinions of special alloy steel, cut teeth hardened and enclosed in oil tight case.

Axles—Heat treated alloy steel, driving axle 5½″ diameter, driven axle 5⅛″ diameter.

Wheels—Cast steel centers with steel tires 33″ diameter having A.R.A. 1920 road service flange and tread shrunk on the centers.

Side Rods—1035 S.A.E. steel forgings, phosphor bronze bushed.

Springs—8-coil springs 11″ long for each truck.

Bolsters—Steel castings. Roller side bearings mounted on bolster.

Brakes—Westinghouse No. 14 EL double end control, direct and automatic air brake system. A.R.A. detachable brake shoes covering treads and flanges of wheels.

Universal Joints—Made of the highest grade hardened steel working parts which are completely enclosed and are grease tight. Universal Joint Shafts are of alloy steel, heat treated, 5″ diameter and are splined.

Transmission—4-speed, jaw clutch type, with compensating clutch. Shafts are of nickel chromium steel heat treated, and carried on Timken roller, Hyatt roller and New Departure ball bearings. Jaw clutches are shifted by air cylinders with provision for manual shifting. Gears are of alloy steel, cut teeth and heat treated. They range in size from 11¼″ diameter, 5″ face to 34″ diameter, 8″ face. Forward and reverse motion of the locomotive is obtained by forward and reverse friction clutches, pedal operated.

Clutches—Operating clutches are two in number, giving the forward and reverse motion to the Locomotive, and are of the single plate dry disc type 28″ in diameter. The disc is split so it can easily be removed and refaced. The compensating clutch is of the cone type, automatically controlled by springs. The engine is connected to the main clutch shaft of the transmission by high-grade Universal joints, to compensate for any misalignment which might occur between engine and transmission.

Gear Ratios—Between engine crank-shaft and drive wheels:
Standard speeds—23 to 1 in first; 11.5 to 1 in second; 5.75 to 1 in third, and 2.87 to 1 in fourth.
Special speeds—15.4 to 1 in first; 7.7 to 1 in second; 3.85 to 1 in third, and 1.92 to 1 in fourth.

Sanders—King Air Sand Traps supply sand to rails at each end of Locomotive.

Lubrication—Trucks are lubricated by splash system and Alemite fittings. Transmission by pump system and Alemite fittings.

Engine—Winton Diesel Engine Type M-141, 8 cyl. 8½″ bore 12″ stroke, airless injection, developing 400 HP. at 700 R.P.M.

Radiator—2 radiators, one at each end. Modine Turbotube sectional core type. Water capacity of engine and radiator 150 gals.

Fan—42″ diameter 8-blade, driven by a 3″ belt.

Fuel Tank—One 160 gallon capacity.

Air Compressor—Two in number—one small combined gasoline engine and 400 lb. compressor to pump air for starting engine, and one 100 ft. capacity Gardner Air Compressor to supply air for air brakes and general service.

Lighting System—Leece-Neville 600 watt 30-37½ volt generator, voltage regulator. Willard storage battery, heavy duty type 15 cells, 100 amp. hour capacity at 8-hour discharge rate. 12″ headlights with 250 watt lamps at each end of Locomotive. Dimming device provided. Four marker lamps and suitable cab lamps to comply with I.C.C. Regulations.

Signals—12¾″ bell with internal quick acting bell ringer. Chime air whistle, or Westinghouse Pneuphonic Horn.

Couplers—Attached to a spring draw head. Full size A.R.A. couplers with slotted knuckles, the center of which is 33½″ above rails, are standard.

Foot Boards and Pilots—Foot boards are furnished as standard. Pilots on special order.

Fuel—For ordinary working conditions, the engine should not use more than 12 gallons of fuel per hour.

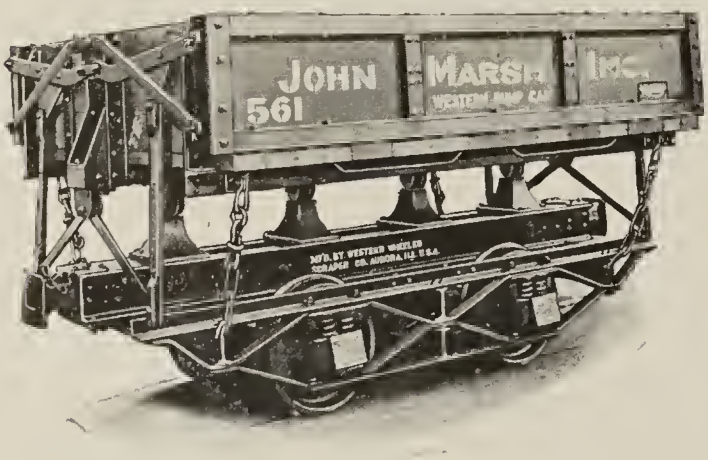
WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment

AURORA, ILLINOIS

WESTERN NARROW GAUGE DUMP CARS

Western dump cars of 36-inch, 30-inch and 24-inch gauge, have an enviable reputation for speed of handling and for endurance. Western 4-yard or 5-yard cars can be found on nearly every job that requires 36-inch gauge dump car equipment.



Western 5-Yard Dump Car

GENERAL DIMENSIONS

Capacity of body, level full, 5 cubic yards.
Gauge, 36″.
Dimensions of bed inside, 9′x6′–9″x2′–2″.
Height of car overall, 6′–2″.
Width of car overall, 7′-6″.
Length of car overall, 12′–2″.
Truck wheel base, 4′–2″.
Height from rail to center of drawbar, 23½″.
Wheels, 20″ in diameter.
Axles, forged, A. R. A. style.
Journals, 3¼″x6¼″ with collar.
Weight about 6,900 pounds
Four or four and one-half make a carload.
This car can be built on meter gauge.

Western 4-Yard Dump Car

Capacity of body, level full, 4 cubic yards.
Gauge, 36″.
Bed dimensions, 9′x6′–9″x1′–9″.
Height of car overall, 5′–9″; width, overall, 7′–6″.
Length of car overall, 12′–2
Wheel base, 4′–2″.
Height from rail to center of draw bar, 23½″.
Wheels, 20″ in diameter.
Axle, forged, A. R. A. style.
Journals, 3¼″x6¼″ with collar.
Weight about 6,700 pounds.
Four to six make a carload.
This car can be built on meter gauge.

Western 2-Yard Dump Car

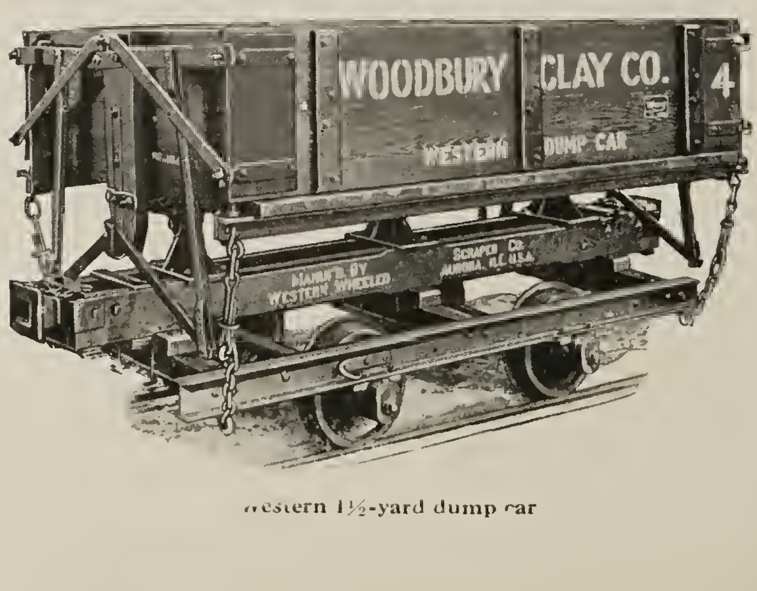
Capacity of body, level full, 2 cubic yards.
Gauge, 30″.
Dimensions, inside, 90″x66″x15¾″.
Height of car overall, 4′–5¾″.
Width of car overall, 6′–2″.
Length of car overall, 10′–2″.
Wheel base, 3′–6″.
Height from rail to center of drawbar, 21½″.
Wheels, 14″ in diameter. Axle, 2½″.
Foot brake each fourth car, additional brakes extra.
Bronze journal bearings, 2⅜″x5½″.
Weight about 2,800 pounds.
Ten to twelve make a carload.

Western 1½-Yard Dump Car—Wood Bed

Capacity of body, level full, 1½ cubic yards.
Gauge, 24″.
Bed dimensions, 6′–3″x4′–6″x1′–5½″.
Height of car overall, 4′–2″.
Width of car overall, 5′-0″
Length of car overall, 8′–10″.
Wheel base, 34″.
Height from rail to center of draw bar, 18½″.
Wheels, 14″ in diameter. Axle, 2¼″.
Foot brake each fourth car, additional brakes extra.
Bronze journal bearings, 1⅞″x4½″.
Weight about 2,000 pounds.
Fourteen to eighteen make a carload.

Western 1½-Yard Dump Car—All-Steel

Capacity of body level full, 1½ cu. yds.
Gauge, 24″.
Bed dimensions, inside, 6′–3″x4′–6″x1′–5½″.
Height of car overall, 4′–2″.
Width of car overall, 5′.
Length of car overall, 8′–11½″
Wheel base, 34″.
Height from rail to center of draw bar, 18½″.
Wheels, 14″ in diameter. Axle, 2¼″.
Foot brake each fourth car, additional brakes extra.
Bronze journal bearings, 1⅞″x4½″.
Weight about 2,300 pounds.
Ten make carload.



Western 1½-yard dump car

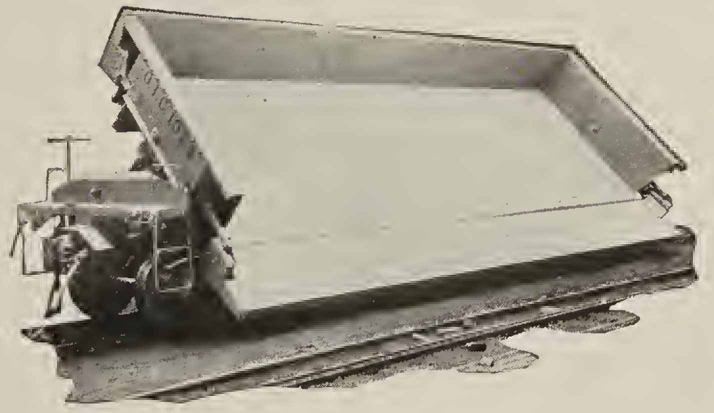
WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment
AURORA, ILLINOIS

THE WESTERN LINE OF AIR DUMP CARS
Drop Door and Lift Door Types

Western air dump cars are made in many sizes and in two types—Drop Door and Lift Door.

The Drop Door Western, the latest thing in dump car construction, was put on the market after several years of active research and experiment. Its instantaneous success fully justified this long and careful study. In several years of active service we have found no limitations to its efficiency and no work that a dump car can perform for which its use cannot be recommended.



Western air dump car, Drop Door type

The great strength of the Western Drop Door air dump car; its absolute safety of operation, there being no locks or side chains; the great distance to which its load can be thrown because of the down-turning door; the ingenious location of dual side pivots enabling the car to dump on a small amount of air; its low loading height, and other features will bring this exceptional car more and more into general use. It is made in four sizes of 30, 25, 20 and 10 cubic yards capacity, the last being of 36-inch gauge.

BOXLEY GOODWIN & BRAY

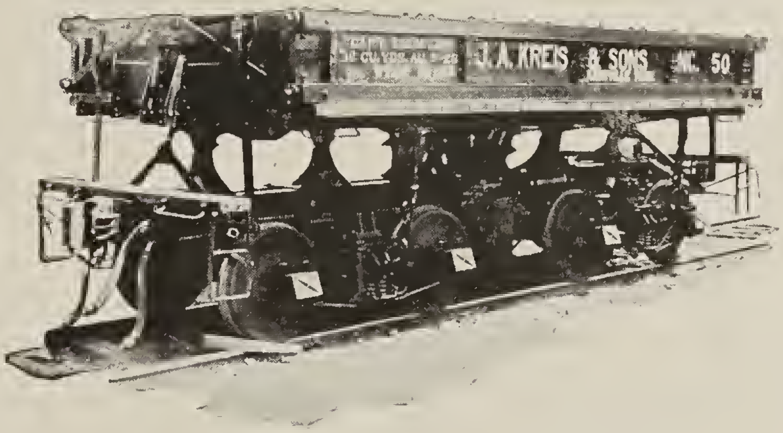
Western 20-yard air dump car, Lift Door type

Western air dump cars of the Lift Door type long have been in almost universal use in power shovel excavation. They are made in all practical sizes, from 12-cubic yards to 30-cubic yards capacity and even 50-cubic yards for handling bulky material.

WINSTON BROS. COMPANY 3095

Western 30-yard Drop Door Dump Car

The Western 12-yard car, which is the dump car in most nearly universal use, is built either for air dumping or hand dumping with a wood bed or of steel with wood floor, steel lined, and the bed is held in position by means of side chains. In the larger cars of this type the locking and unlocking of the bed is controlled through compression locks operating automatically by air. All Western cars can be dumped on curves or any grade; one at a time or all at once; all on one side, or part on one side and part on the other. No shifting or changing of any mechanism is necessary to dump on either side.



Western 12-yard dump car, Lift Door type

There is a tendency towards the use of larger loading units and the larger sizes of Western air dump cars are being installed more and more in general construction work. In the Cincinnati Union Terminal job, for example, more than 100 30-yard Westerns of the drop door type were installed.

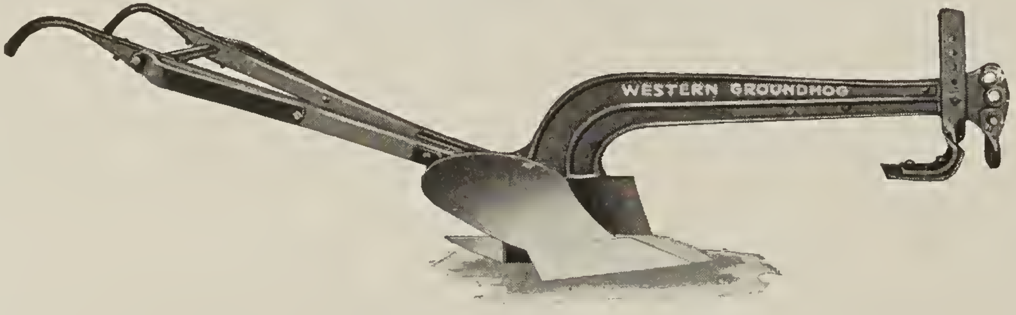
Western air dump cars sometimes can be secured on a rental basis. Full information will be given on request.

WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment

AURORA, ILLINOIS

WESTERN GRADING PLOWS



Western Groundhog—a two-purpose plow

Western grading plows are made in 17 types and sizes to fit all classes of work. Five types, made in various sizes, are pictured below. The buyer should remember that when he buys a new Western share he buys an entire new landside, not just a new point. Whenever you renew a Western share you renew all the main wearing parts on the plow.

Special attention is called to the two-purpose Western plow shown above. It is a grading and rooter plow combined, equipped with reversible points of the best tool steel. The Groundhog is always shipped assembled with removable bit and moldboard. Cheek plates are shipped with the equipment for converting the Groundhog into a Rooter, by removal of share and moldboard.

Western No. 5 Grading Plow

The Famous Western No. 5

No. 5 plow, 4 horses; 11″ cut; weight plow only, 180 lbs.; weight of share, 30 lbs. The most universally used of all grading plows.

Western Rooter Plow

Western Rooter Plow

No. 20 Western Rooter suitable for 6 to 8 horses; weight plow only, 275 lbs.; weight of point, 20 lbs.; (see also Groundhog plow).

No. 25 Western Rooter suitable for 12 horses or engine of equal power. Weight plow only, 425 lbs.; weight of point, 45 lbs.

Western All-steel Grading Plow

Western All-Steel Plows

No. 15 plow, 4 horse; 11″ cut; weight plow only, 185 lbs.; weight of share, 30 lbs.

No. 16 plow, 2 horse; 11″ cut; weight plow only, 150 lbs.; weight of share, 25 lbs.

No. 7 Western Grading Plow

No. 7 plow, light two horse; 11″ cut; weight plow only, 115 lbs.; weight of share, 20 lbs.

Western No. 7 Grading Plow

Plows for Heavy Work

No. 1, 6 horse; 12″ cut: weight plow only, 225 lbs.; share, 45 lbs.

No. 2, 8 horse; 12″ cut; weight plow only, 255 lbs.; weight of share, 50 lbs.

No. 3, 10 horse; 10″ cut; weight plow only, 305 lbs.; share, 55 lbs.

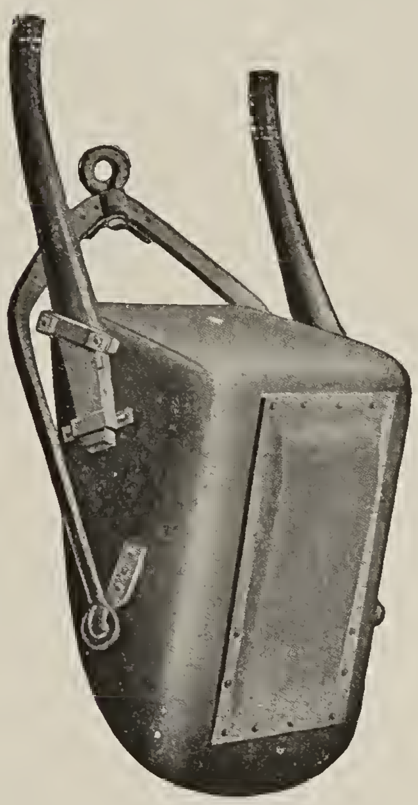
No. 4, 12 horse; 10″ cut; weight plow only, 395 lbs.; share, 55 lbs.

WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment

AURORA, ILLINOIS

Western Drag Scraper



View of side and bottom

The Western Drag Scraper is as standard as sugar. It is made from a single piece of steel bent cold to insure the longest possible wear. An extra bottom, easily renewable, takes the wear. It is easily loaded and loses little dirt in transit. It is made in three sizes.

Interior View

GENERAL DIMENSIONS

Description	Capacity	Weight
No. 1 Size....................	5½ cu. ft.	110 lbs.
No. 2 Size....................	4½ cu. ft.	105 lbs.
No. 3 Size....................	3½ cu. ft.	100 lbs.

About two hundred and forty drag scrapers make a carload

Illinois Drag Scraper

This scraper is offered when a cheaper tool than the Standard Western is desired. The steel is somewhat lighter. Bottom runners on the pan take the wear.

GENERAL DIMENSIONS

Description	Capacity	Weight
No. 1 Illinois Drag Scraper with runners	5½ cu. ft.	100 lbs.
No. 2 Illinois Drag Scraper with runners	4½ cu. ft.	90 lbs.

Western Ox Drag

This is the best large drag scraper on the market. It is made for special service in the removal of cinders, leaves, sawdust, etc., or for cable operation, and is not intended for use in soil.

GENERAL DIMENSIONS

Description	Capacity	Size of Pan Inches	Weight
No. 0, Ox Drag............	9 cu. ft.	36x36x12	175
No. 00, Ox Drag...........	12 cu. ft.	38x37x13½	210
No. 000, Ox Drag..........	14 cu. ft.	38x41x13½	225
No. 0000, Ox Drag.........	16 cu. ft.	44x41x16	260

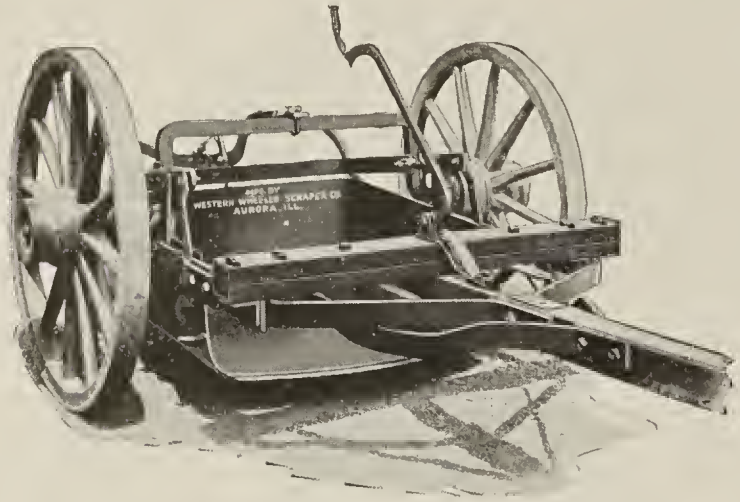
WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment

AURORA, ILLINOIS

WESTERN WHEELED SCRAPERS

Western Wheeled Scrapers are made very strong of special steel bent cold in forming the pan and in two types and several sizes. The Standard wheeler is the stronger and heavier of the two and is intended for hard usage encountered in contract work. The Township wheeler is of lighter construction for occasional use on light work.



Western Standard wheeled scraper

Direct Tractor Hitch

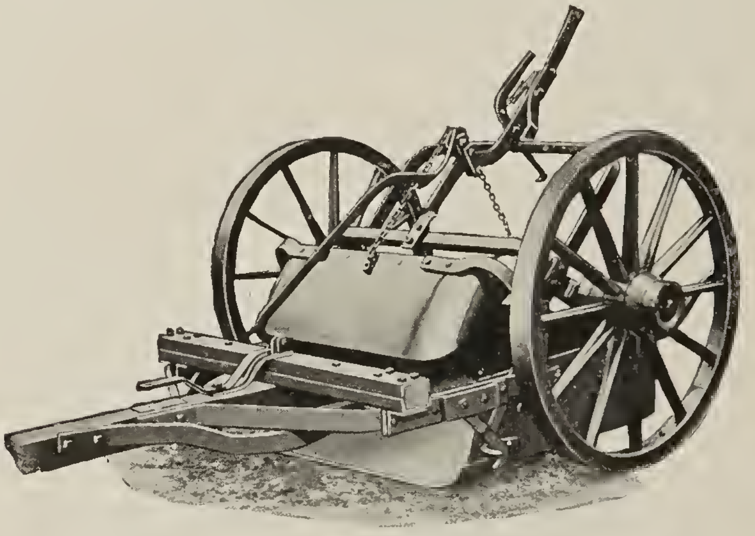
When a small tractor is used, it is necessary to use a special hitch which can be furnished as shown in the illustration at the bottom of the page. This device permits vertical adjustment at variable draw bar heights and holds the pan in proper position.

Adjustable Bit

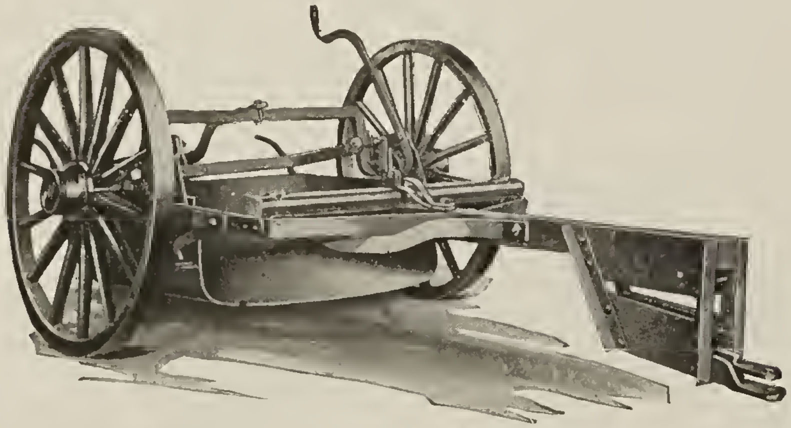
Western Wheelers can be purchased equipped with a high carbon steel bit (extra cutting edge) attached to the pan that adds materially to the life of the pan. The bit can be renewed when worn. This bit is of such practical value that it is in almost universal use.

Automatic End Gates

On long hauls where the material is loose enough to spill over the open end of the pan, we can furnish automatic end gates which will retain the material. When the pan is lowered for filling, the end gate lifts automatically. When the pan is raised to carrying position, the gate drops down.



Wheeler in position to load. Automatic end gate open.



Western wheeled scraper with offset hitch for tractor use

GENERAL DIMENSIONS

Description	*Capacity	Weight
No. 1 Township Wheeler	9 cu. ft.	485 lbs.
No. 2 Township Wheeler	12 cu. ft.	525 lbs.
No. 0 Standard Wheeler	7 cu. ft.	400 lbs.
No. 1 Standard Wheeler	9 cu. ft.	525 lbs.
No. 2 Standard Wheeler	12 cu. ft.	775 lbs.
No. 2½ Standard Wheeler	14 cu. ft.	810 lbs.
No. 3 Standard Wheeler	16 cu. ft.	830 lbs.

*Strike off measure.

WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment
AURORA, ILLINOIS

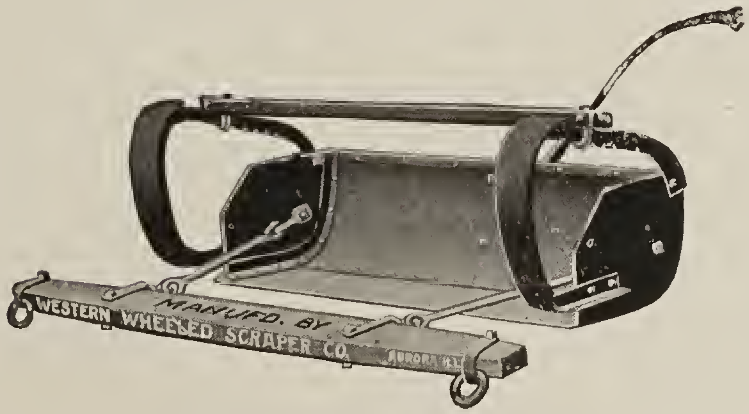
WESTERN FRESNO OR BUCK SCRAPER

The Western Fresno, in soil to which it is adapted, is an especially economical and efficient tool. For the most economical operation, the haul should not be over 100 feet. When operated, the pan is dragged through plowed ground until it fills with dirt. In down-hill operation it pushes fully as much additional dirt in front of it, thus doubling its apparent capacity. Because of this the rated capacities of fresnos mean nothing. Western fresnos are so constructed that they will move the maximum amount of material for length of cutting edge.

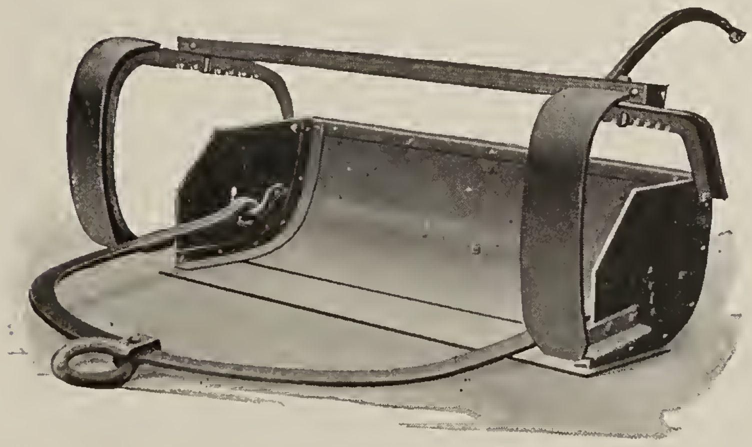
At the back of the frame is a long handle that acts as a lever for the loading and dumping. In dumping the load, the driver lifts this handle, tipping the pan slightly. The team, attached to pull-rods, does the rest, pulling the pan over until it rests on two runners, which lift the pan clear of the ground and permit the load to be discharged. These runners are protected by shoes that take all the wear and can be replaced easily.

The bar which regulates how far over the pan turns is adjustable, permitting the load to be spread in as thin a layer as desired. The cutting edge or bottom can be replaced when worn, making the scraper practically as good as new.

The Western Fresno is of very rugged construction. The pan is bent cold to preserve the toughness and smoothness and prevent excessive wear.



Fresno with pull rods and evener



Fresno with bail

GENERAL DIMENSIONS

Heavy California Pattern

	Weight
No. 1, cutting 5′	340 lbs.
No. 2, cutting 4′	310 "
No. 3, cutting 3′-6″	270 "
No. 4, cutting 3′	235 "
No. 5, cutting 2′-6″	200 "

Light Western Pattern

No. 1, cutting 5′	310 lbs.
No. 2, cutting 4′	270 "
No. 3, cutting 3′-6″	245 "

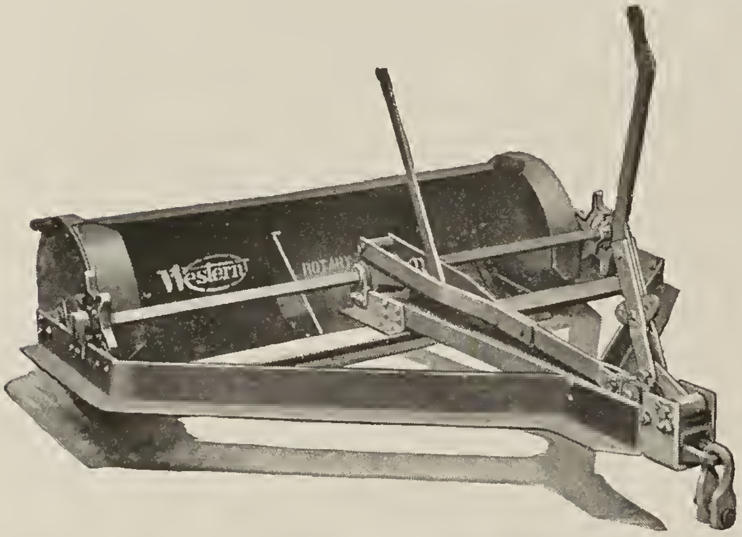
Fresnos with eveners will be shipped unless otherwise specified, except the No. 5 on which the bail is standard.

WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment

AURORA, ILLINOIS

WESTERN ROTARY FRESNO



The Western Rotary Fresno is an exceptionally economical tool on all hauls up to 250 feet. The heavier of two patterns is recommended for use with a 30-crawler tractor. The lighter can be used with a 10-crawler tractor or a 15-30 round-wheeled tractor, but the latter not when conditions are unfavorable.

One-Man Operation

Strength and ease of control are the outstanding features of this machine. Except where the loading lever is within easy reach, the tractor operator controls the various operations through a rope—loads the fresno, carries the load, dumps and spreads it without leaving his seat. He does not even have to pull the loaded pan out of the ground for transportation. The pull of the tractor does it without effort on his part.

Transporting the load

Dumping and spreading

Returning from the dump

Forward Movement

All movements can be made while the tractor is in continuous forward motion, but, if desired, for working corners and other inaccessible places, the Rotary Fresno can be backed.

Very Sturdy Construction

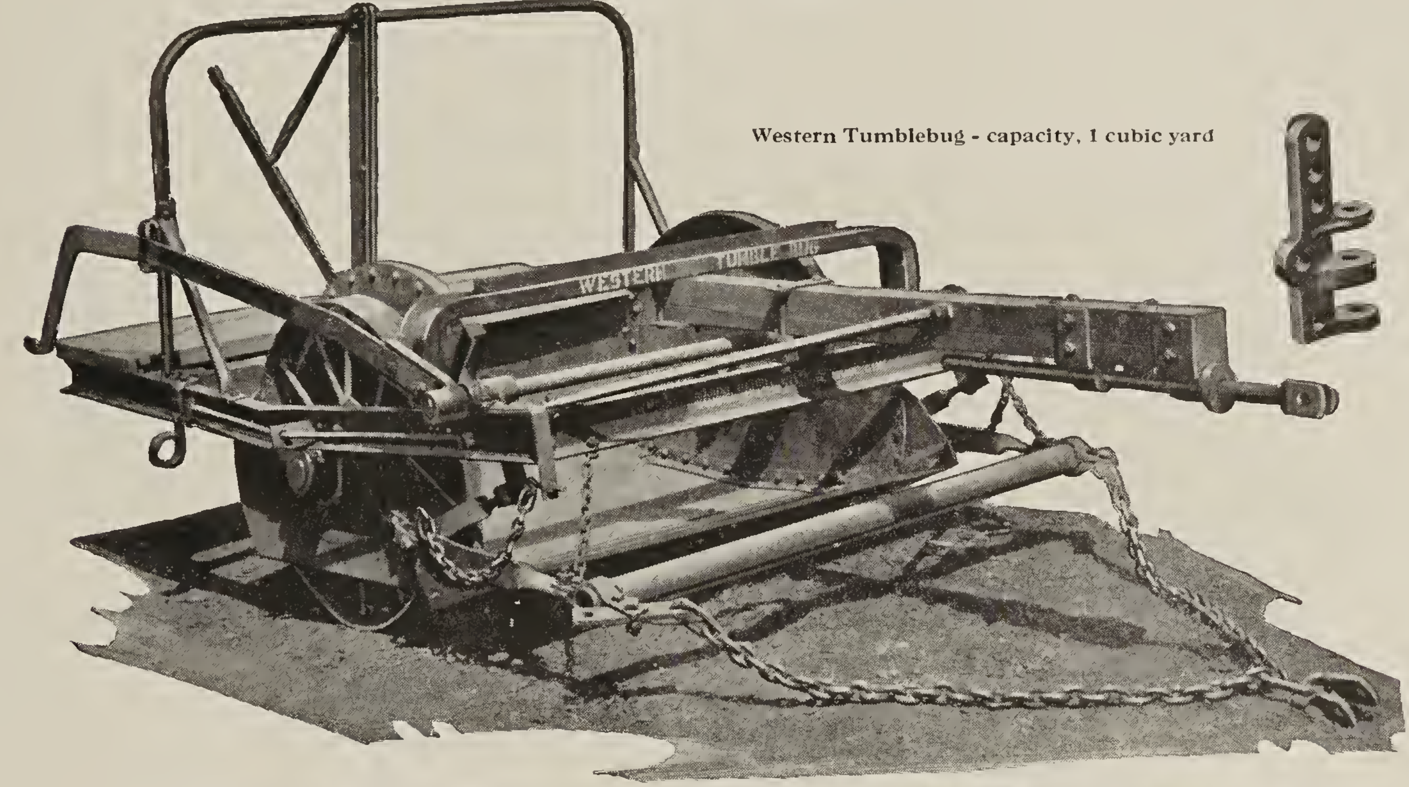
Western Rotary Fresnos are made of steel with few parts and are hot-riveted throughout. The ends are solid and there are no springs to break or get out of order. The Western Rotary Fresno is made for various sized tractors as shown in the following table, covering the light and heavy patterns.

	No. 15 Light Pattern	No. 20 Heavy Pattern	No. 30 Heavy Pattern
Cutting width	5′-0″	5′-0″	6′-0″
Height at back	22″	22″	22″
Length, c of pan to c of drawbar	6′-6″	6′-6″	6′-6″
Weight	663 lbs.	775 lbs.	827 lbs.
Tractor, any type Max. power	10 H.P.	30 H.P.	30 H.P.

WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment

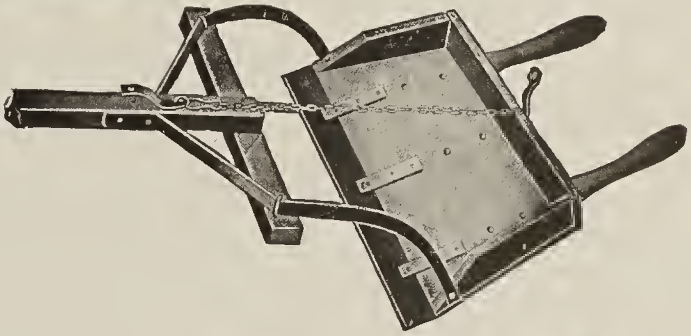
AURORA, ILLINOIS



Western Tumblebug - capacity, 1 cubic yard

Western Tumblebug

A large scraper for tractor operation—an all-steel, two-wheeled unit of one cubic-yard capacity—rugged construction, without sprockets, drive chains or clutches. Practical working range from 150 to 1,500 feet. Three Tumblebugs in train formation can be handled behind a 30-horsepower tractor; one or two behind a smaller tractor. The sole operating mechanism is one primary lever, one spring controlled secondary lever and a straight shaft across the front. This is an ideal cut-and-carry tool of great simplicity and efficiency.



Western Mormon or Chicago Tongue Scraper

Chicago Tongue Scraper

A great favorite with highway officials and contractors, possessing advantages over a drag scraper in some classes of work. It has an easily replaceable steel cutting edge. Made in one size only cutting 48″ wide; weight, 140 lbs.

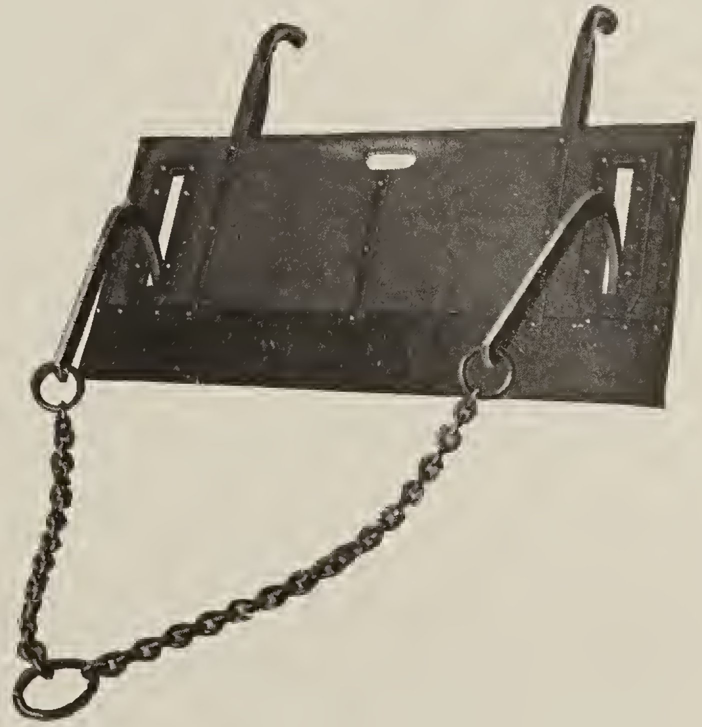
Western Back Filler

An inexpensive and handy tool for back filling small trenches. It is 24″ wide, less the handles; 4′-2″ long, with a triple B ⅜″ draft chain. Draft beams are ⅝″x1¾″ bar steel; steel bit, 7″ wide. Pan built of oak boards, 13/16″ thick; weight, 90 lbs.

A heavier steel Trench Filler is also furnished.

Western Gutter Cleaner

An inexpensive and practical tool built originally for the Chicago Street Department. Modeled after the Western fresno for street cleaning. Cleaning width, 2′-6″; height at back, 13½″; weight, 140 lbs.

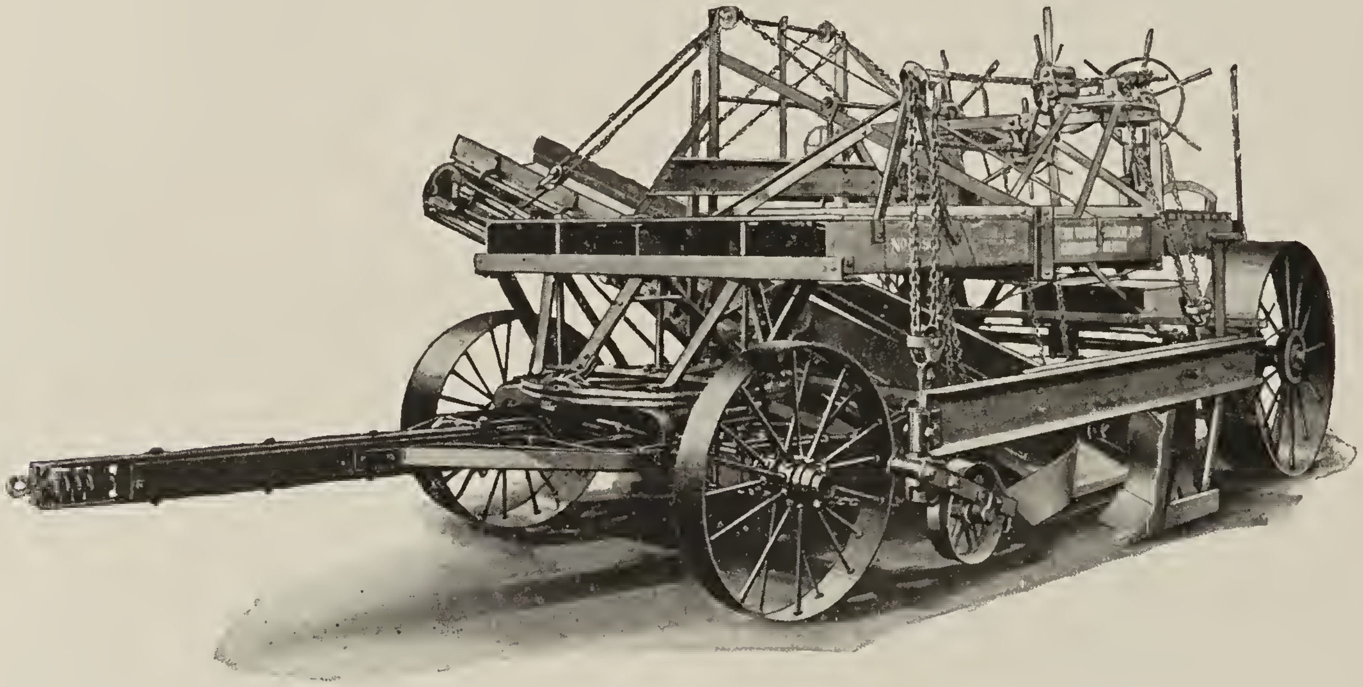


Western Back Filler

WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment

AURORA, ILLINOIS



WESTERN STANDARD ELEVATING GRADER

This machine is the old reliable standard Western, improved and strengthened in keeping with the increased power unit. It is furnished with a disc or moldboard plow, as desired, or with both at a small extra charge. The disc is 28 inches in diameter and may be either fixed or rotative. Unless otherwise ordered, a moldboard plow is furnished. The frame of this machine is built very strong to stand the strain of powerful motor tractors. The wheels are strong and have broad tires. The elevator is quickly and conveniently adjustable and a perfect alignment of the belt is maintained. Built strong enough for heavy tractor operation.

GENERAL DIMENSIONS

	Levee Special	Standard	Giant
Tread—C. to C. Rear Wheels	8′–0″	8′–0″	9′–0″
Tread—C. to C. Front Wheels	6′–6″	6′–6″	7′–6″
Width of rear tires	12″	12″	12″
Width of R. H. Front Tire	12′	12″	12″
Width of L. H. Front Tire	6″	6″	6″
Plow Beam	2′–9″ Chan.	2′–9″ Chan.	2′–9″ Chan.
Axle—Front	2$\frac{11}{16}$″ Alloy	2$\frac{11}{16}$″ C. R. St.	2$\frac{15}{16}$″ C. R. St.
Axle—Rear	3$\frac{3}{16}$″ Alloy	3$\frac{3}{16}$″ Forged St.	3$\frac{1}{2}$″ Forged St.
Counter Shaft	2$\frac{1}{2}$″ C. R. St.	2$\frac{7}{16}$″ C. R. St.	2$\frac{7}{16}$″ C. R. St.
Weight, with Stub Engine Hitch	17,500 lbs.	12,800 lbs.	15,000 lbs.
Length of Elevator in Standard Construction	21′–0″	18′–0″	27′–0″
Maximum length of elevator practical without counter-balance	21′–0″	21′–0″	24′–0″
Special lengths furnished if desired	18′ and 24′	15′–21′ & 24′	13′–24′–27′ & 30′

Steerable offset engine hitch or complete horse hitch equipment furnished at extra cost when desired.

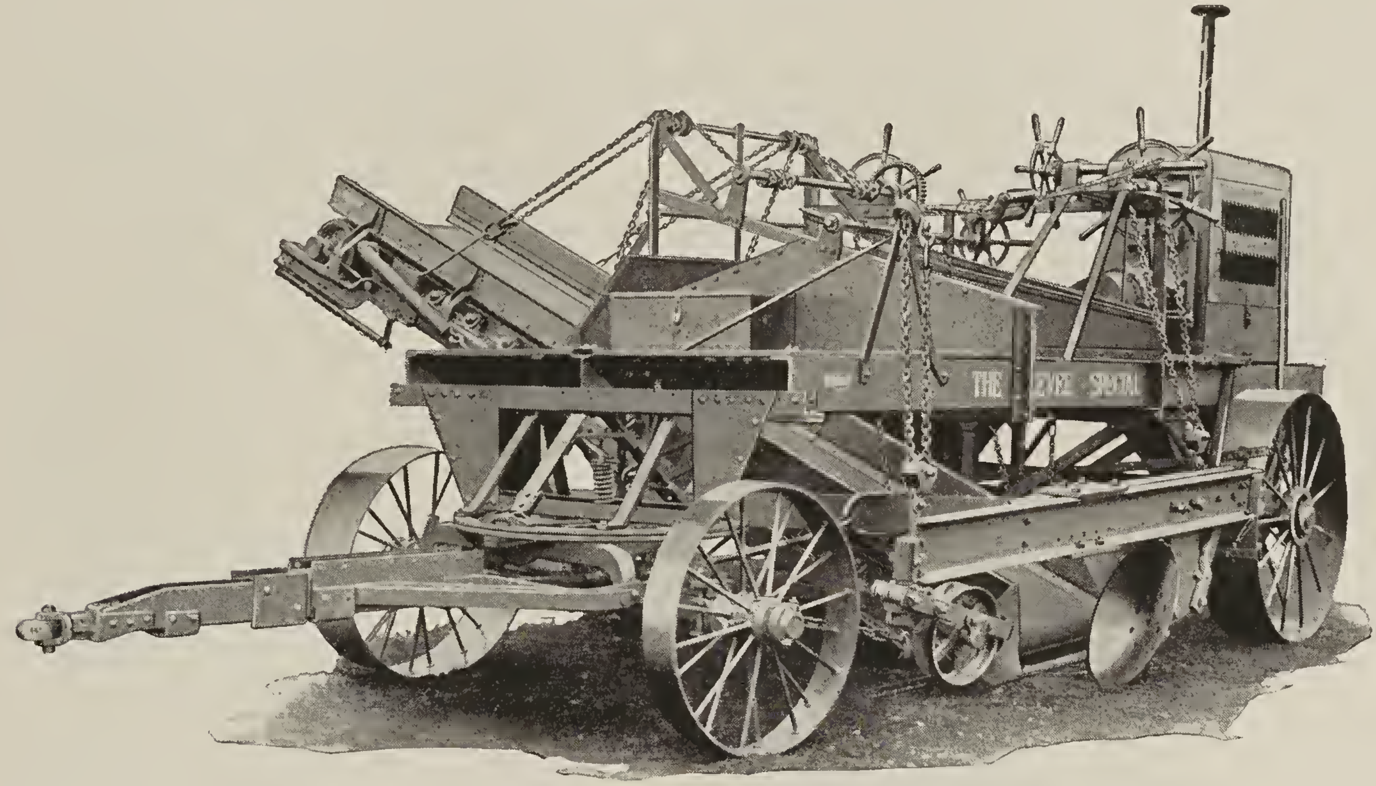
Forty-inch carrier furnished on standard machine at extra cost when specified. Standard Machine recommended for general contractors' use.

Giant Machine recommended for casting long distances, railroad embankments, wide ditch excavation, etc.

WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment

AURORA, ILLINOIS



WESTERN LEVEE SPECIAL ELEVATING GRADER

The most distinctive feature of the Western Levee Special is that the elevator belt is driven by a four-cylinder engine of 40-horsepower instead of by the traction of the rear wheels or by power takeoff from the tractor, either of which throws an extra load on the tractor and lessens its pulling efficiency. However, we build a similar elevating grader with a power takeoff for use behind a tractor which has sufficient reserve power to handle the belt load without lessening its pulling efficiency. In the Levee Special, the entire capacity of a 50 to 75 horsepower tractor is available for pulling the machine and plow, as the motor relieves it of the load required to elevate the dirt. The amount of dirt moved per hour is thus greatly increased and the machine is enabled to operate in sand and wet material.

There is an entirely new elevator. Both bottom and top rollers have anti-friction bearings running in dirt tight and water-proof housings. The elevator has but one control for the raising and lowering of the head end. This control is a back geared chain winding device. It is possible to raise and lower the head drum to accommodate variations in the ground surface and in the height of wagons without changing the tension on the belt.

There is a special method for preventing the dirt from falling on the return side of the belt. This permits the side boards to be placed farther apart so that in the 42-inch belt, which is standard for this machine, there is a clear space of 40 inches for the elevation of dirt. It is not necessary to change the tension on the belt. An automatic belt tightener controls the tension and increases contact with the driving drum automatically as the load increases.

The hand operating wheels have been placed high enough to accommodate tall men and the frame has been redesigned and made still stronger to conform to the increased capacity of the machine and the greater pulling power of the tractor.

GENERAL DIMENSIONS

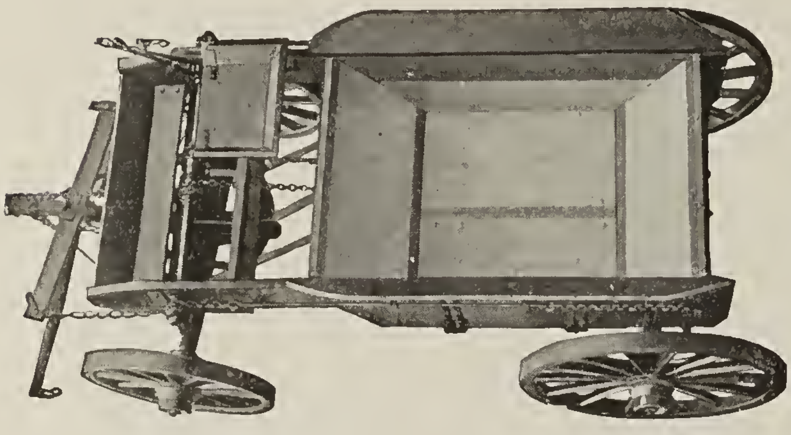
Width overall, with 16′–0″ elevator	20′–6″
Length overall	25′–0″
Width of frame	6′–6″
Length of frame (including motor supports)	17′–10″
Front tread, center to center of wheels	6′–5″
Rear tread, center to center of wheels	8′–1″
Wheel base	13′–4½″
Height of platform	4′–9″
Length of standard elevator	21′–0″
Width of standard elevator belt	42″
Maximum length of elevator without counterbalance	21′–0″
Maximum clearance under discharge end of elevator	5′–8″
Weight	17,500 lbs.
Horsepower on belt	40 H. P.
Horsepower required on draft	40 to 75 H. P.
Number of control wheels	4
Number of control levers	6
Lubrication	Alemite

WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment

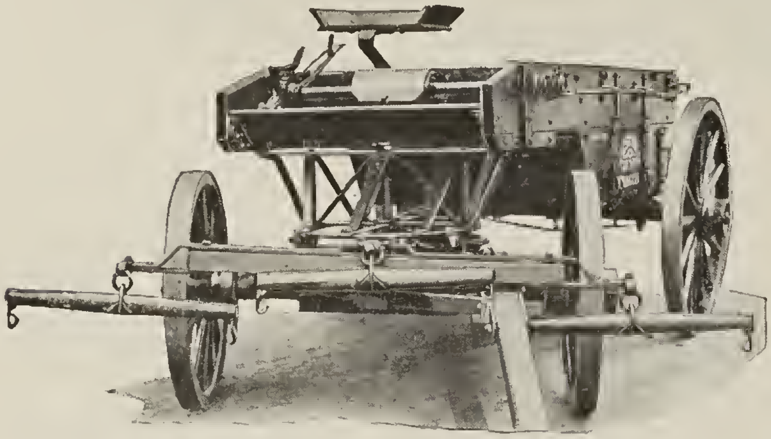
AURORA, ILLINOIS

WESTERN DUMP WAGONS--Round Wheel Type



Interior view showing steel channel and ironing of bed

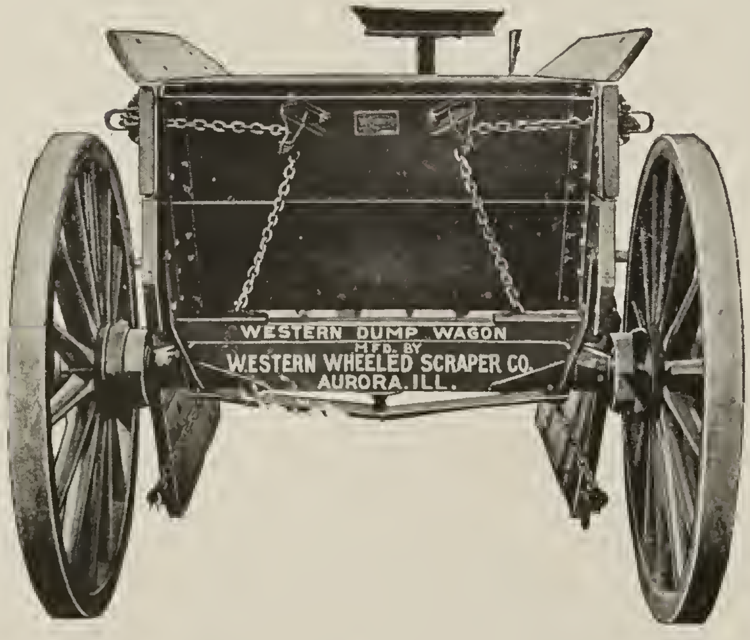
The very general use of Western Dump Wagons where both strength and lightness of draft are essential is the strongest recommendation that could be given. Western wagons are built strong enough for use under a power shovel and light enough for team hauling. Many contractors will use no other wagon under a shovel because no shovel runner can keep from sometimes striking the wagon with the drop bottom of the dipper and the Western is the only wagon that will stand up. Steel channel construction, a distinctive Western feature, saves the wagon from abrasion.



Western dump wagon-made with either steel or wood bolster

Strength with Ease of Draft

Strength with ease of draft is obtained by reinforcing with steel those parts which are subject to heavy strain and using Washington fir instead of oak wherever practicable, fir being equally strong and much lighter. The end top boards, being subject to abrasion, are built of the best quality oak. The main side rail which gets the downward strain of the load is a steel plate bent to form a channel in which a 1¾"x11" brace is bolted. The inner edges of the doors are covered with channel iron.



Note rear axle truss, giving added strength

GENERAL DIMENSIONS

One and one-half Yard Wagon

Skeins front 3¼"x10"; rear, 3½"x11".
Wheels, front, 38" high; rear, 50" high.
Tire, 3½"x½". Track, 5'-2".
Height from ground to top of box, 4'-8".
Opening for discharge of load, 44"x39".
Weight about 2,100 pounds.

Two Yard Wagon

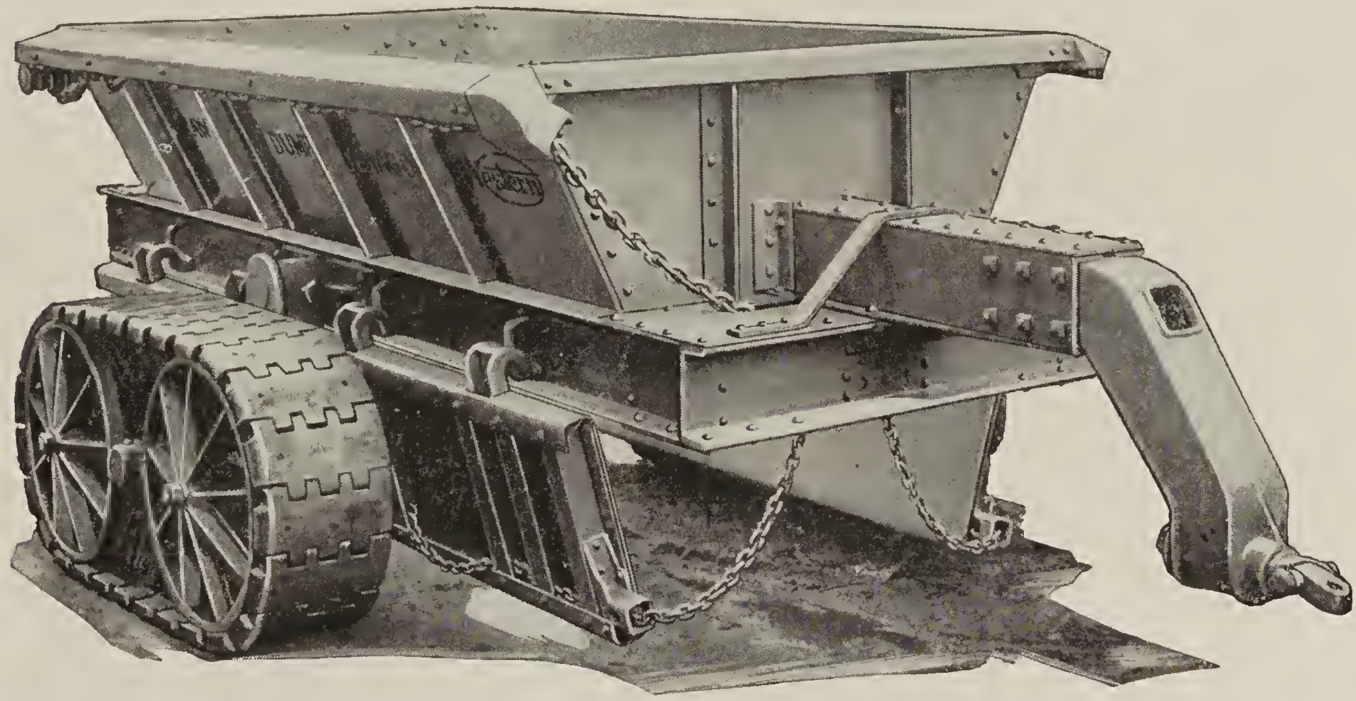
Skeins, front, 3½"x11"; rear, 3¾"x12".
Wheels, front, 38" high; rear, 50" high.
Tire, 3½"x½". Track 5'-2".
Height from ground to top of box, 4'-9".
Opening for discharge of load, 44"x51".
Weight, about 2,250 pounds.

Wagons with steel bolster shipped unless otherwise ordered.

WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment

AURORA, ILLINOIS



WESTERN 5-YARD CRAWLER DUMP WAGON

With Direct Tractor Hitch

To meet the demand for a Crawler wagon with direct tractor hitch (cart type), a Western wagon of 5 cubic yards capacity has been developed. It is a very strong all-steel wagon of the same general design as the larger wagons but differing in two important particulars.

This wagon has no front truck, the front end being attached directly to the tractor. The load is balanced on Athey Truss Wheels of either 10-ton or 15-ton capacity. It has only one set of bottom dump doors, instead of two, controlled by a single lever, used for dumping and closing the doors. The 5-yard Western Crawler wagon can be handled easily in single units by 30-horse power tractors. Two or three 5-yard wagons in train formation can be handled by a large tractor when hauling conditions are favorable. Should conditions suddenly change, there is an advantage in being able to drop one unit and still continue operations, hauling a large yardage. There are times also when the direct tractor hitch is advantageous.

In this wagon, as in the larger sizes, the rear draw bar is a heavy steel casting to which a second wagon can be hitched when it is desired to operate the wagons in trains. This rear draw bar casting is furnished on all Western Crawler dump wagons.

GENERAL DIMENSIONS

Tread of rear wheel, out to out	8′–0″
Width of body, inside at top	5′–6″
Width of body, inside at bottom	3′–8″
Depth of body, inside	2′–9⅝″
Length of body at top	9′–11″
Width of wagon, overall	8′–4″
Height overall	5′–3″
Discharge opening	3′–8″x9′–11″
Center of Athey wheel to center of draw bar connection	10′–3″
Capacity	5 cubic yards
Weight, with 10-ton wheel	7,500 lbs.

Athey Truss Wheels

For dimensions, see preceding pages.

TRACK SHOE.—Special High Carbon Chrome Alloy Steel, heat-treated.

TRACK PIN.—High Manganese Chrome Alloy Steel, carburized and hardened.

TRIP CHAIN BOLT AND LINK ASSEMBLY.—High Carbon Chrome Nickel Alloy Steel, heat-treated.

TRACK WHEEL SPINDLE.—Chrome Nickel Alloy Steel, heat-treated.

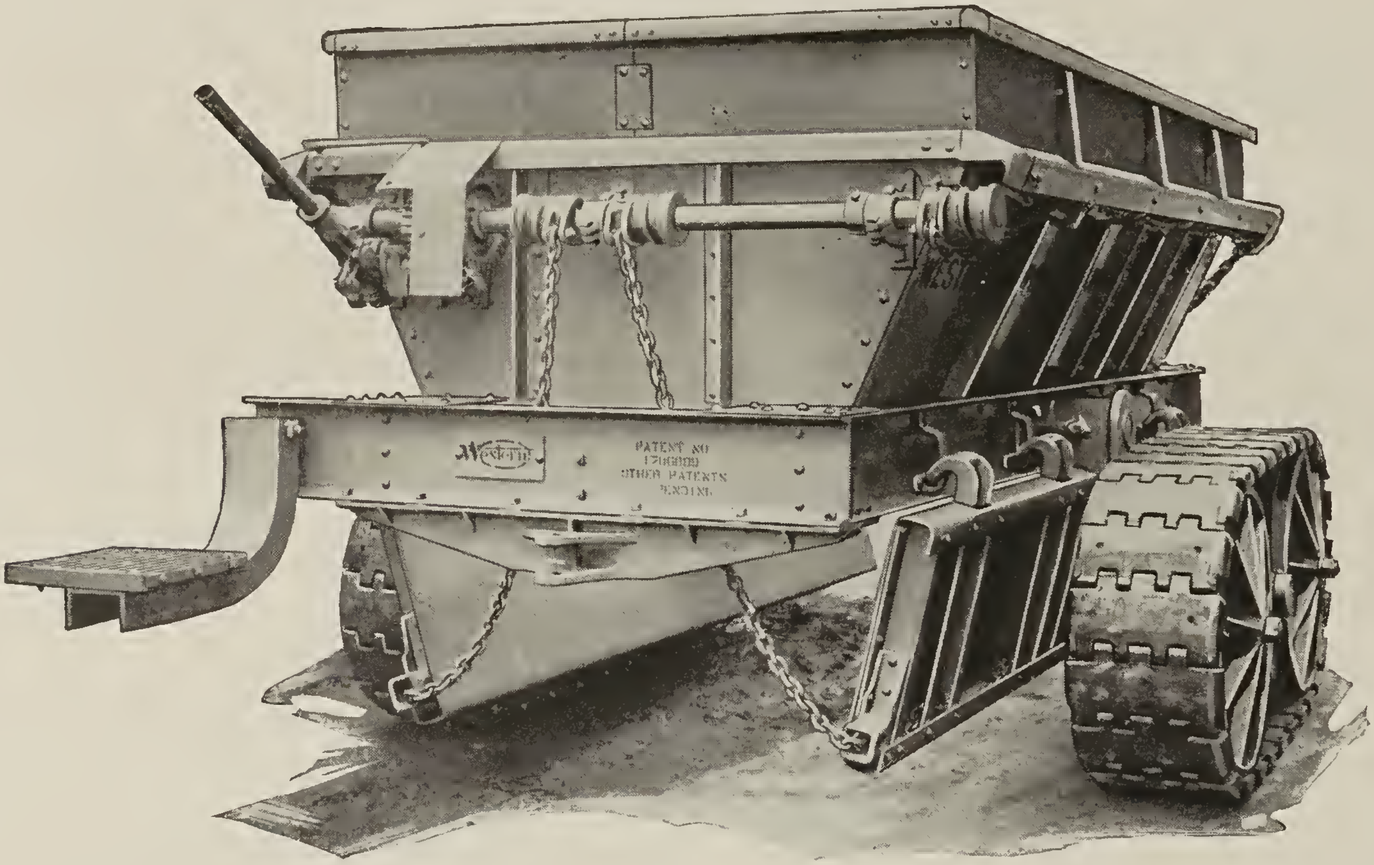
TRACK WHEEL BEARINGS.—Hyatt Roller with adjustable Plain Thrust.

LUBRICATION.—Alemite.

WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment

AURORA, ILLINOIS



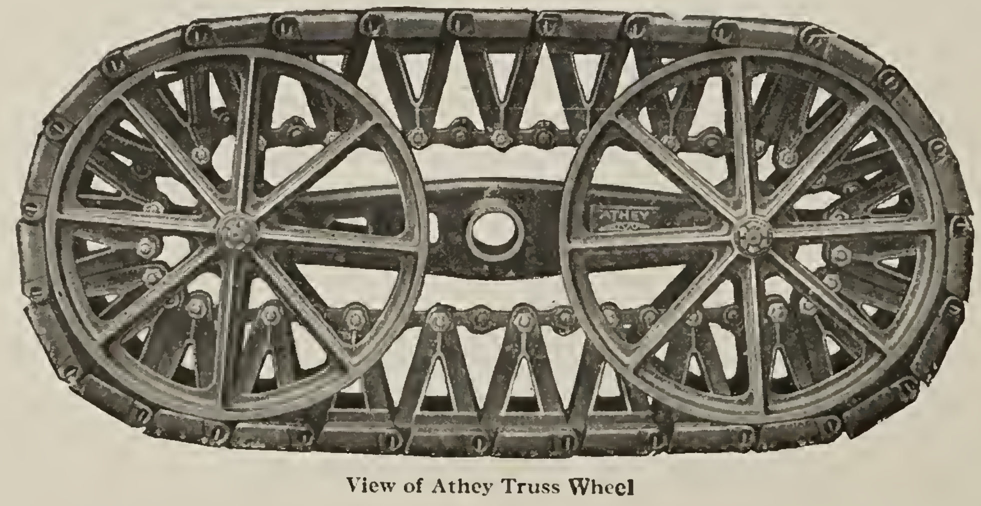
WESTERN 7-YARD CRAWLER WAGONS

With Direct Tractor Hitch

There is no front truck on this wagon. The front end is attached to the tractor direct leaving the load balanced on Athey Truss Wheels. There is but one set of bottom dump doors for the discharge of the load. The dumping mechanism is at the rear end and outside, out of the way of the discharge. This wagon, like the other types and sizes of Western Crawler dump wagons, can be pulled in trains when hauling conditions are favorable, thus reducing the unit cost. A rear draw bar of heavy steel is furnished, to which a second wagon can be hitched for train operation. The wagon is of heavy steel construction designed to stand up under the abuse to which all dump wagons are subjected. While either 10-ton or 15-ton wheels will be furnished, 15-ton wheels are recommended.

GENERAL DIMENSIONS

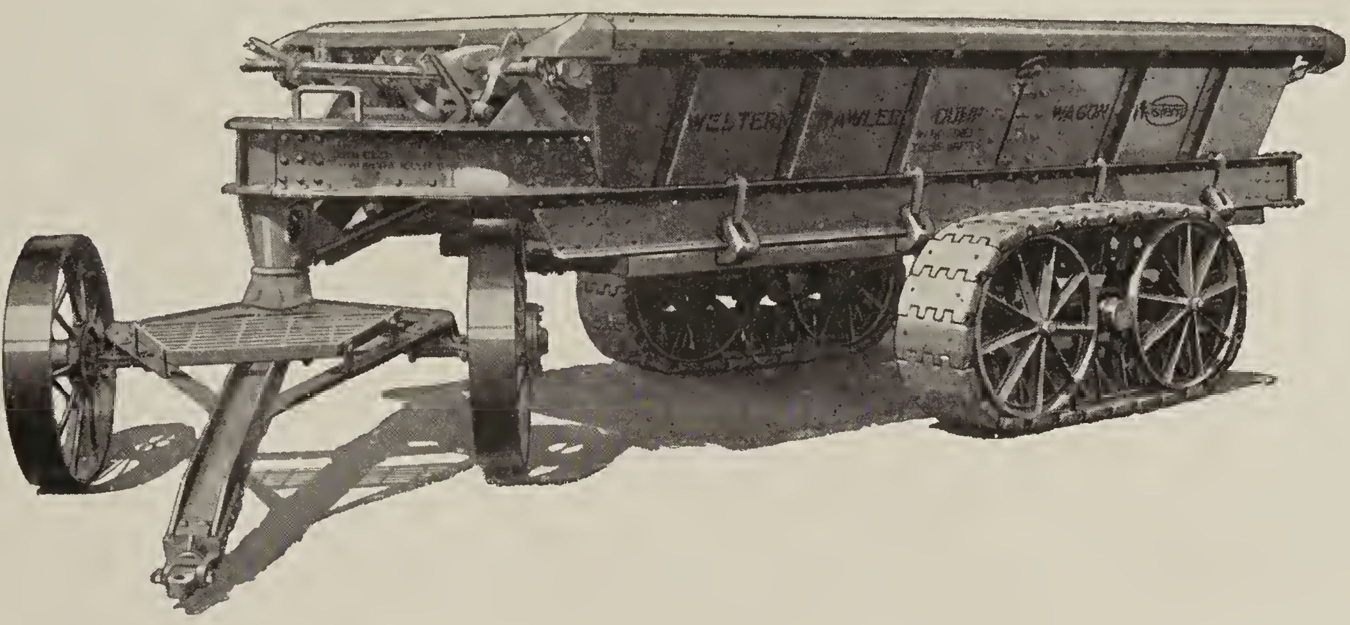
	10 Ton	15 Ton
Tread of rear wheels, out to out	8′-0″	8′-11¾″
Width of body, inside at top	5′-6″	5′-6″
Width of body, inside at bottom	3′-8″	3′-8″
Depth of body, inside	3′-6⅝″	3′-6⅝″
Length of body at top	9′-11″	9′-11″
Width of wagon overall	8′-4″	9′-3¾″
Height overall	6′-0″	6′-0″
Discharge opening	3′-8″x9′-11″	3′-8″x9′-11″
Center of Athey wheels to center of drawbar connection	10′-3″	10′-3″
Capacity	7 cu. yds.	7 cu. yds.
Weight, 10-ton wheels	7,860 lbs.	....
Weight, 15-ton wheels	....	10,500 lbs.



View of Athey Truss Wheel

WESTERN WHEELED SCRAPER COMPANY

Dump Cars and Grading Equipment
AURORA, ILLINOIS



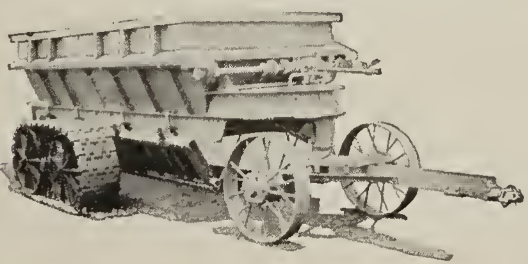
WESTERN 7-YARD AND 10-YARD CRAWLER DUMP WAGONS

With Front Running Gear

This 7-yard Crawler dump wagon is an all-steel wagon built with front running gear. Nearly ninety percent of the load is carried on Athey Truss Wheels, which can travel wherever a crawler tractor can travel. The wagon is furnished with wheels of either 10-ton or 15-ton capacity as desired. There are two sets of bottom dump doors, one in front and one back of the axle, which can be dumped simultaneously or one at a time. The dumping and winding mechanism is outside out of the way of the discharge. This wagon is low enough to be loaded by an elevating grader. The rear draw bar is a heavy steel casting to which a second wagon can be hitched. A large crawler tractor can pull two loaded wagons in train formation when hauling conditions are good and the entire train can turn on a fill, 30 feet wide. Built also with direct hitch. Fifteen-ton wheels are recommended.

Western 10-Yd. Crawler Dump Wagon

For Power Shovel Loading



The Western 10-yard Crawler dump wagon meets the demand for a Crawler dump wagon of greater capacity for power shovel loading. There are two sets of bottom-dump doors, one in front and one back of the axle. These are wound up by the operator by means of a ratchet attachment at the front, much as on a standard 1½-yd. dump wagon. It is exceptionally strong and is mounted on Athey Truss Wheels of 15-ton capacity. Ten-yard wagons can be pulled in trains of two by a powerful tractor under favorable hauling conditions.

GENERAL DIMENSIONS

	7-Yard	10-Yard
Tread of front wheels, out to out	5′–6″	5′–6″
Tread of rear wheels, out to out	7′–8″	8′–10″
Width of body, inside at top	5′–6″	5′–6″
Width of body, inside at bottom	3′–8″	3′–8″
Depth of body, inside	2′–9⅝″	3′–9⅝″
Length of body at top	14′–3″	14′–3″
Width of wagon, overall	8′–0″	9′–2″
Height overall	5′–3″	6′–3″
Door—Dicharge opening:		
Front	3′-8″x6′- 4″	3′-8″x6′- 4″
Rear	3′-8″x5′-10″	3′-8″x5′-10″
Athey wheel to center of front axle	10′–4″	10′–4″
Capacity	7 cu. yds.	10 cu. yds.
Weight with 10-ton wheels	10,500 lbs.	
Weight with 15-ton wheels	2,500 lbs.	13,300 lbs.

Athey Truss Wheels

	10-Ton	15-Ton
Overall width	18½″	21⅞″
Overall height	34″	36″
Overall length	72″	78″
Track wheels, C. to C	38″	41″
Track width	14½″	18″
Supporting area per wheel	4½ sq. ft.	6 sq. ft.

THE PHILIP CAREY COMPANY

LOCKLAND, OHIO

Waterbury—Torrington Road, Conn. State Highway Dept., ½″ Elastite Expansion Joint longitudinally on the center line, and transversely at close intervals.

Carey Elastite EXPANSION JOINT

CAREY Elastite Expansion Joint consists of two substantial layers of Asphalt saturated felt, between which is interposed a heavy body of asphalt compound, the whole being inseparably bonded together, sandwiched by mechanical pressure.

Carey Elastite Expansion Joint is furnished in widths up to 36″, thickness from ¼″ to 1″. Greater thicknesses are supplied to order as required. It can be ordered in any length, although because of shipping facilities and ease of handling, we do not recommend lengths greater than 10 feet.

It can be readily cut to the crown of the road or can be formed to suit unusual conditions of installation. It comes to the job cut ready to use, or if preferred, we furnish it in sheets to be cut to fit by the purchaser as required.

Carey Elastite Expansion Joint is stiff and rigid and is as easily handled as a board; it keeps its shape and does not melt or stick together in hot weather, neither is it brittle and hard in the winter. There need be no loss, waste, inconvenience or delay—once installed it continues to function during the entire life of the structure.

Carey Elastite Expansion Joint passes all expansion joint specifications everywhere. It seals over joints and does not break off and it protects the edges of the concrete at the joint.

Our Engineering organization is at the service of contractors anywhere in the country. These engineers will be glad to help you solve any installation problems that might come up. Carey Elastite Expansion Joint is employed to absorb and control the changes in length in rigid structures resulting from variation in temperature and moisture. It is widely used in:

Roads
Curbs
Driveways
Reservoirs
Bridges
Dams
Concrete Roofs
Concrete Floors
Gutters
Concrete Areas
Swimming Pools
Retaining Walls
Concrete Platforms
Sewage Disposal Plants
Sidewalks
Streets
Buildings
Tanks
Sea Walls
Stadia

TABLE OF WEIGHTS

Uncrated weight per 100 lineal feet. When crated for less than carload shipment, estimate 15% over these weights. (These weights are average for estimating and are not guaranteed.)

Thicknesses	3″ lbs.	3½″ lbs.	4″ lbs.	5″ lbs.	6″ lbs.	7″ lbs.	8″ lbs.	9″ lbs.	10″ lbs.	11″ lbs.	12″ lbs.
¼-inch	37	43	50	63	75	87	99	112	124	137	149
⅜-inch	56	66	75	94	113	131	150	169	188	206	225
½-inch	76	89	102	127	153	178	203	229	254	280	305
¾-inch	114	132	151	189	227	265	303	341	378	416	454
1-inch	154	179	205	256	307	358	409	461	512	563	614

Sixty-four branches and distributors throughout the country insure service and quick delivery. For further details, samples, and prices write The Philip Carey Company, Lockland, Ohio.

THE PHILIP CAREY COMPANY

LOCKLAND, OHIO

ELASTITE Asphalt Plank represents an entirely new idea in bridge paving material and is entirely unlike anything hitherto used for this purpose. It is a dense, hard, tough composition of asphalt, fibre and finely divided mineral. Having no grain it does not swell, shrink, warp, or check. It does not absorb moisture, is proof against decay and is unaffected by weather.

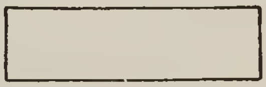
Elastite Asphalt Plank is only slightly affected by extremes of temperature. Unlike some other asphaltic paving materials it does not corrugate or build itself up in transverse ridges under traffic. It is not brittle in winter, neither does it become soft in hot weather, but remains firm, smooth and resilient at all times.

Elastite Asphalt Plank actually **improves with use.** In service the action of traffic rolls and compresses the surface to an even, uniform texture. **It knits and heals under traffic.**

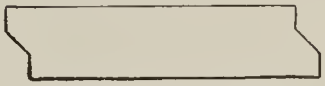
Elastite Asphalt Plank is furnished in good sized slabs—not small blocks—in convenient thicknesses and widths and in two standard cross sections: (a) Straight Side and (b) Modified Ship-Lap, as shown in the accompanying sketches.

Carey Elastite Asphalt Plank

Two standard shapes



1. Straight sides



2. Modified ship-lap

Table of Sizes and Weights

		Weight per 100 sq. ft.
1 "x6"x3' 0"	Straight Sides	800 lbs.
1 "x6"x3' 0"	Modified Ship-lap	800 lbs.
1¼"x6"x3' 0"	Straight Sides	1000 lbs.
1¼"x6"x3' 0"	Modified Ship-lap	1000 lbs.
1½"x8"x6' 0"	Straight Sides	1200 lbs.
1½"x8"x6' 0"	Modified Ship-lap	1200 lbs.
2 "x8"x6' 0"	Straight Sides	1600 lbs.
2 "x8"x6' 0"	Modified Ship-lap	1600 lbs.

Elastite Asphalt Plank is used over either wood or concrete. When applied over wood it is well spiked down with ordinary wire nails, and in the case of concrete it is cemented down in hot asphalt. It is strictly a wearing surface and will not span openings and irregularities. For satisfactory results it must be continuously and firmly supported throughout the entire area.

Elastite Asphalt Plank is being successfully used by a number of State Highway Departments, Counties and Municipalities in various parts of the country. Its remarkable resistance to wear, its ease of application, and its freedom from maintenance, are outstanding advantages which are thoroughly appreciated by Bridge Engineers everywhere.

Application over Wood Suggested Specification

Work Proposed. This specification contemplates furnishing all materials required to complete the floor.

Materials. The material used in the construction of the floor shall be Carey Elastite Asphalt Plank of the cross section designated as ......, furnished in preformed slabs, ...in thickness, and weighing approximately ......lbs. per 100 square feet.

Application. The wood sub-floor shall be sound and firm, and shall previously have had projecting nails removed and shall have been brought to an approximately plane surface.

Carey Elastite Asphalt Plank shall be laid in a neat, workmanlike manner, individual planks being crowded up in close contact with adjacent units, and spiked down securely with nails of suitable size. Nails shall be spaced about 8" to 12" apart, staggered, two nails being used at each end of each piece.

Application over Concrete Suggested Specification

Work Proposed. This specification contemplates furnishing all materials required to complete the floor.

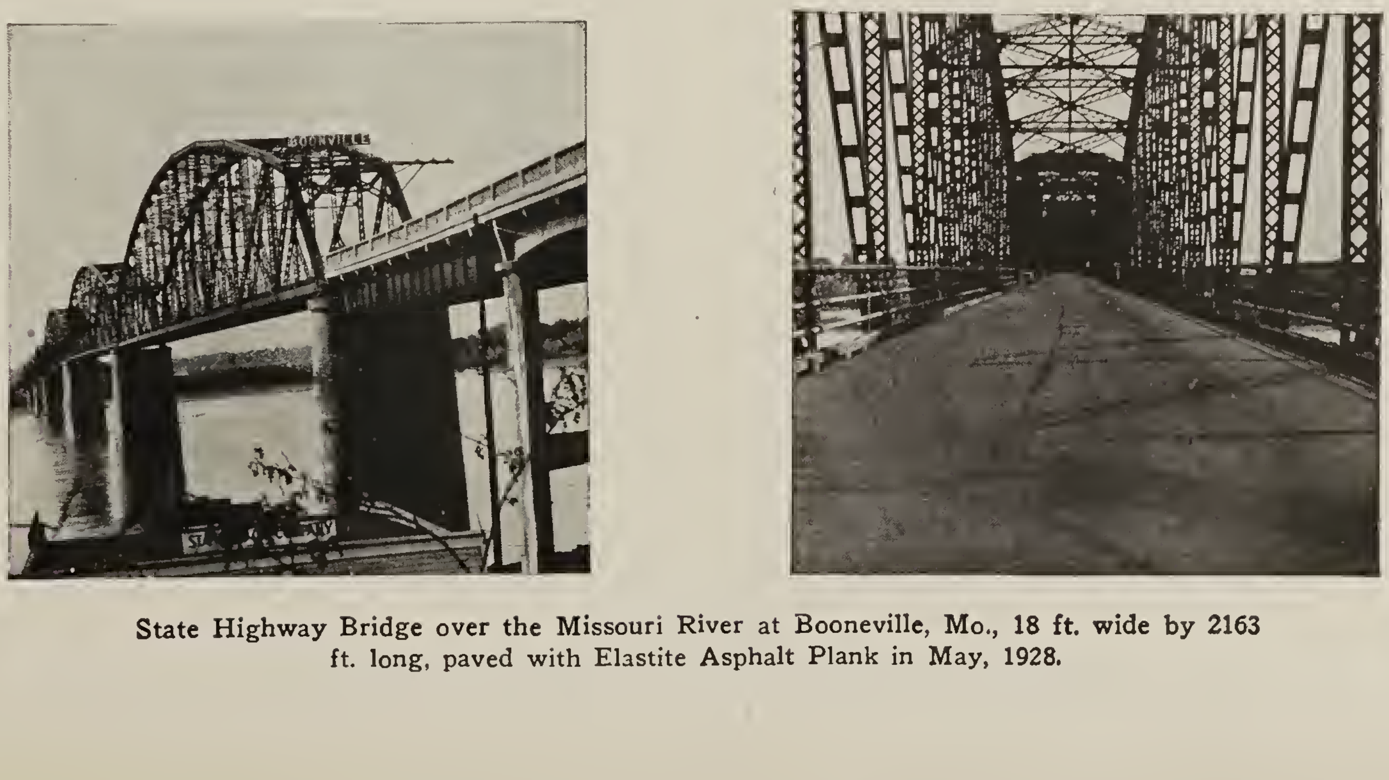
Materials. The materials used in the construction of the floor shall be as follows:

100 sq. ft. Carey Elastite Asphalt Plank
15 lbs. Carey Asphalt Primer
50 lbs. Carey Manco Asphalt

The Elastite Asphalt Plank should be of the cross section designated as "Straight Side," furnished in preformed slabs, ...in thickness, and when in place should weigh approximately ......lbs. per 100 square feet.

Application. The concrete shall first be coated with Carey Asphalt Primer, thoroughly brushed in. The surface shall then be mopped with Carey Manco Asphalt, applied hot, into which the Carey Elastite Asphalt Planks shall be embedded. The pieces shall be laid in a neat, workmanlike manner, individual planks being crowded up in close contact with adjacent units.

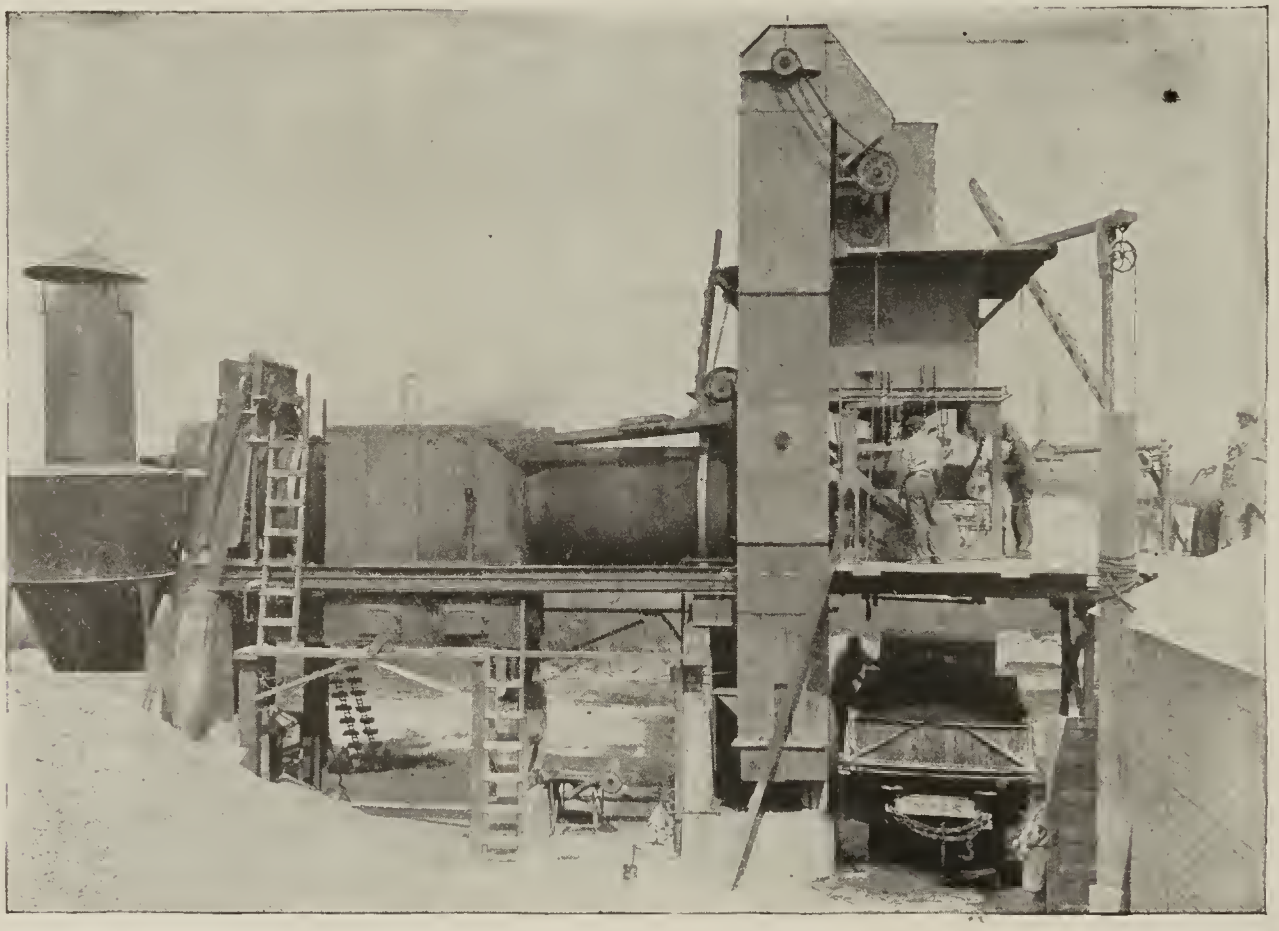
Send for sample and descriptive literature.



State Highway Bridge over the Missouri River at Booneville, Mo., 18 ft. wide by 2163 ft. long, paved with Elastite Asphalt Plank in May, 1928.

THE F. D. CUMMER & SON COMPANY

Cleveland, Ohio, U. S. A.



The New **CUMMER** Two Fire Asphalt Plant

The Cummer plants are the result of thirty years continuous building of asphalt paving machinery by the present organization of this company, aided by the friendly, constructive criticism and suggestions of our many customers.

New Asphalt pavements and improved methods of handling the older types of asphalt pavements have necessitated some quite radical changes and many refinements in Cummer Plants. These changes and refinements all tend towards better paving mixtures, larger capacities and cheaper plant operating costs.

We have constantly had in mind the fact that our customers are entitled to the benefits of our latest improvements and have designed our new devices (in most instances) so they can be used on our old plants.

All Cummer Plants are considerably underrated in capacity and this can be proven by inquiring of any of our many users.

Made in Three Sizes

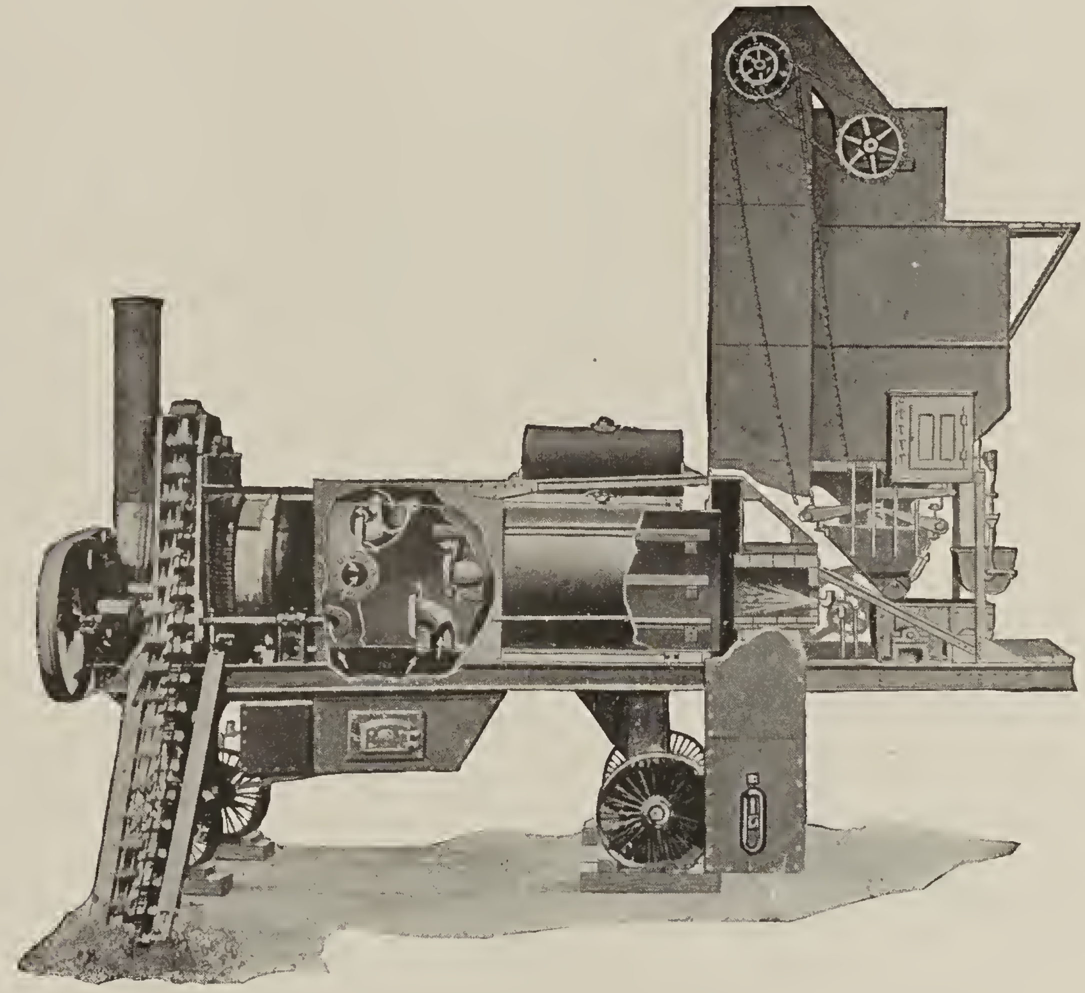
SPECIFICATIONS

Size in Sq. Yards Per Day	Dryer Per Hr.	Mixer	Bin	Boiler	Engine
2200 yard	25 ton	1500 lbs.	25 ton	125 H.P.	60 H.P.
1600 yard	20 ton	1300 lbs.	18 ton	80 H.P.	50 H.P.
1000 yard	12 ton	1000 lbs.	12 ton	50 H.P.	40 H.P.

CUMMER PLANTS NEVER WAIT FOR HOT SAND

THE F. D. CUMMER & SON COMPANY

Cleveland, Ohio, U. S. A.



Cutaway View of

The New **CUMMER** Two Fire Dryer

A Combination of both internal and external fire dryer

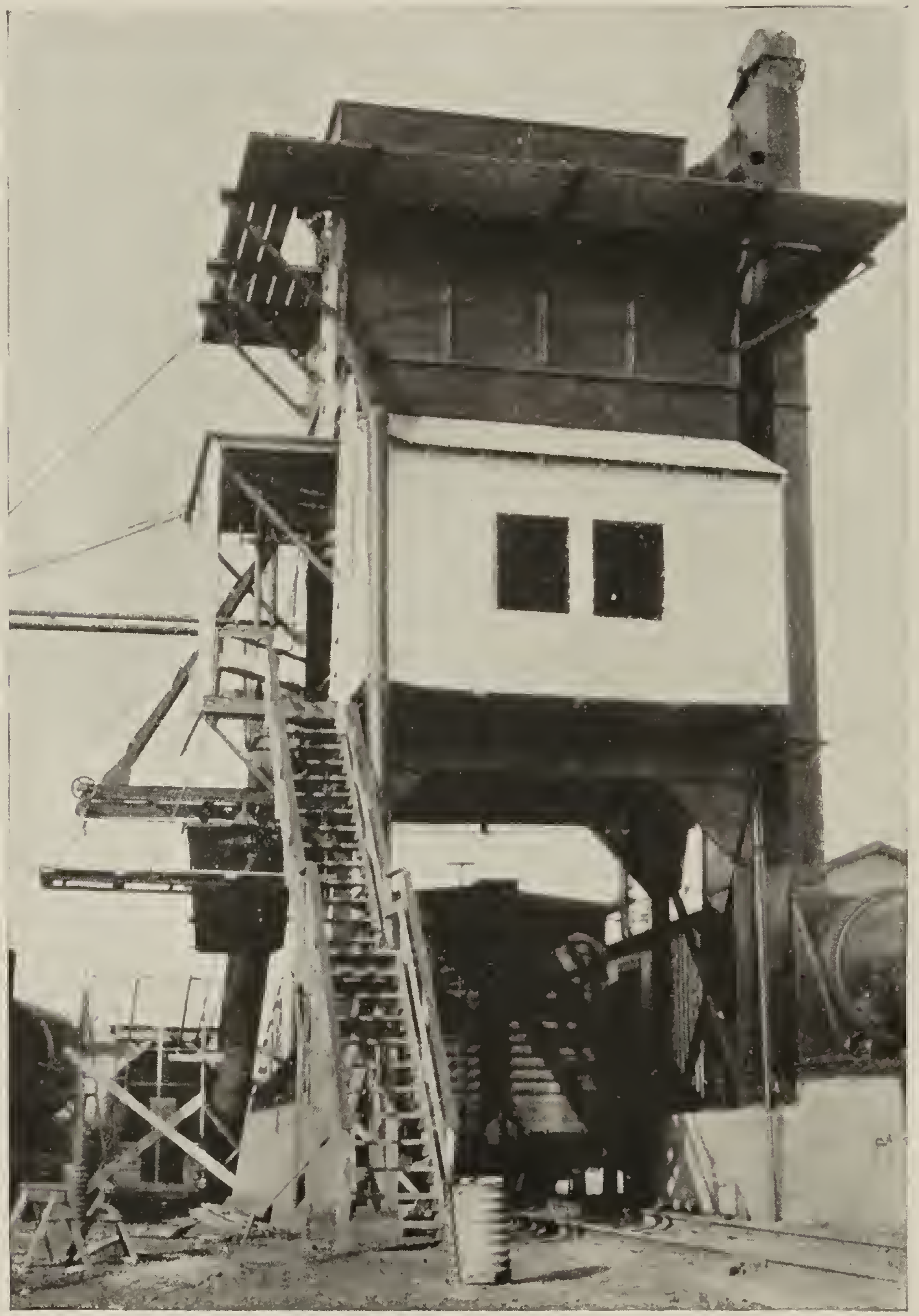
This dryer will dry and heat large quantities of sand and stone at a very low fuel oil cost, by reason of the products of combustion being brought in direct contact with the wet sand at high temperatures, in the front part of the dryer. As the sand becomes partly dried and is discharged to the rear end of the dryer it is met by another hot blast from another oil burner and combustion chamber located in the rear end of the dryer which finishes off the drying and heating. The *results obtained* are accurate temperature control, nominal dust loss, longer life of drum, product uniformly dried and large drying capacity.

We also build this dryer for stationary plants — capacities 10 to 40 tons of dried and heated sand per hour.

CUMMER PLANTS NEVER WAIT FOR HOT SAND

THE F. D. CUMMER & SON COMPANY

Cleveland, Ohio, U. S. A.



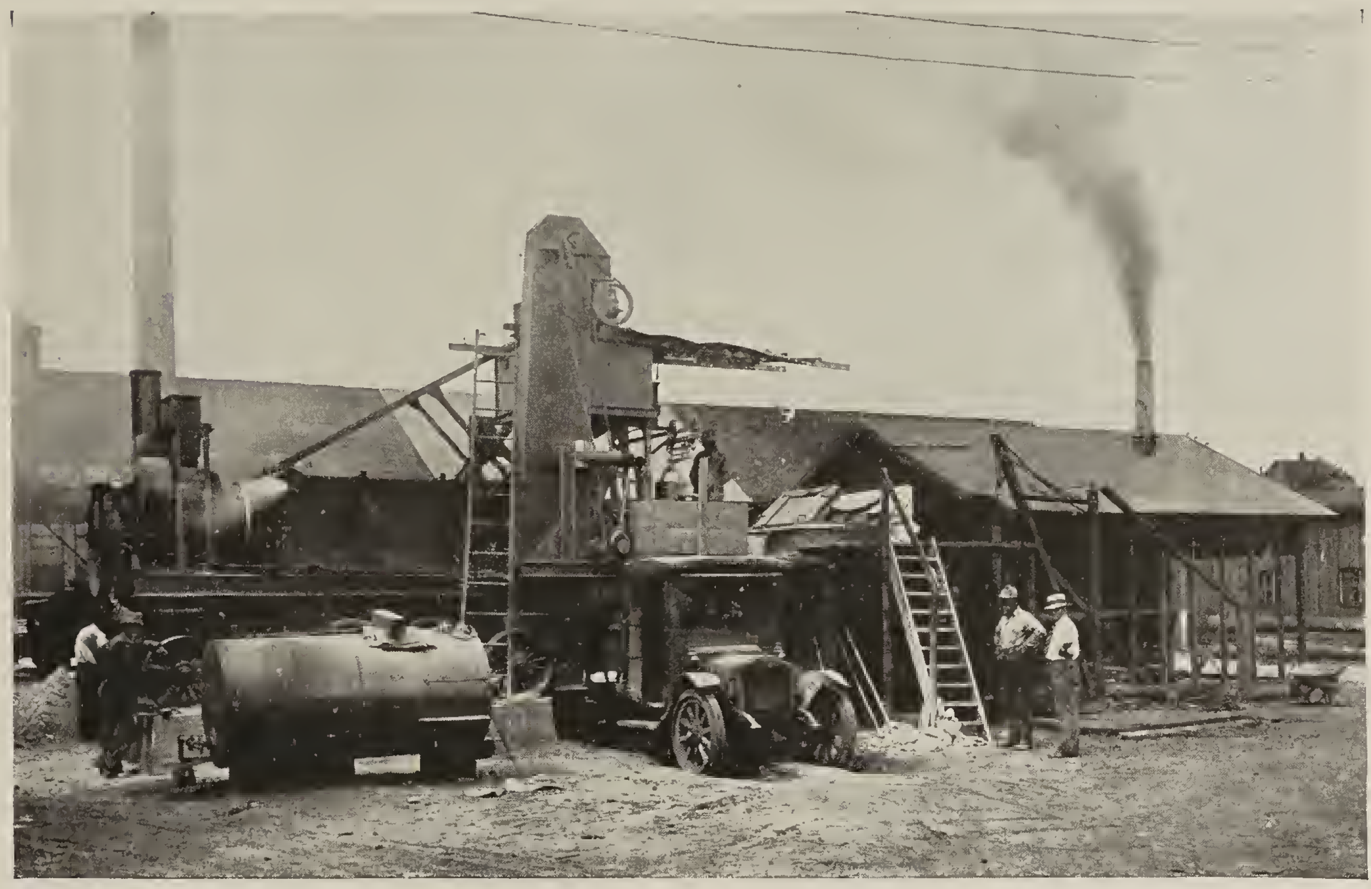
CUMMER Stationary and Semi Portable Plants

Built in various sizes ranging in capacity from 2500 to 5000 square yards of 2 inch sheet asphalt topping per day. Equipped with one two-fire dryer, one mixer, extra large storage bin (100 to 200 ton capacity), screen, weigh box, scales, etc. We design these plants to meet local conditions. Many in operation.

CUMMER PLANTS NEVER WAIT FOR HOT SAND

THE F. D. CUMMER & SON COMPANY

Cleveland, Ohio, U. S. A.



CUMMER Maintenance or Portable Patcher Plant

SPECIFICATIONS

Capacity	Drum	Sand Bin	Mixer	Boiler	Engine
400 to 600 sq. yds.	5 ton per hr.	4 ton	400 lbs.	20 H.P.	15 H.P.

Built along the same general design and with the same sturdy construction as the Cummer Portable road plants. *It can be moved along the road.* The hot sand elevator is hung on a pivot and can be let down and placed on top of the drum without disturbing the chain and buckets. The screen box can be let down on screen box skids (which are provided) without necessity of taking down the screen box.

Ideally adapted for small municipalities for maintenance and patching jobs. Economical in operation. Will produce 600 square yards of 2 inch sheet asphalt topping.

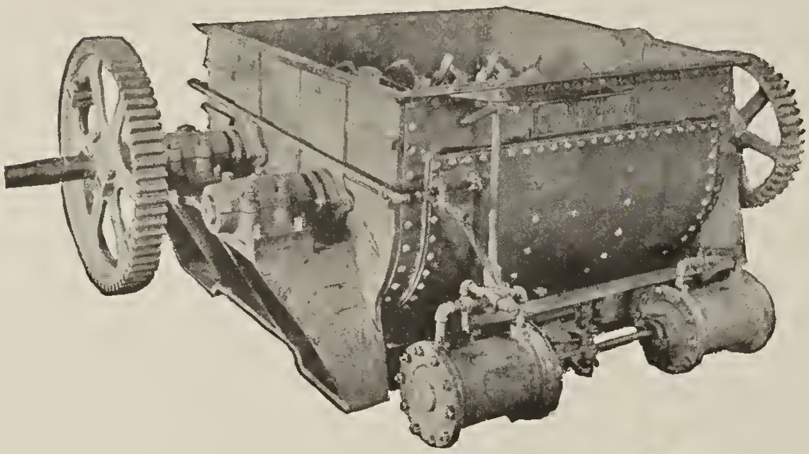
CUMMER PLANTS NEVER WAIT FOR HOT SAND

THE F. D. CUMMER & SON COMPANY

Cleveland, Ohio, U. S. A.

The CUMMER Heavy Duty Mixer

1500 lb., 2000 lb., 4000 lb. capacity



Especially rigid and heavy construction is used in all these mixers to withstand the severe service given them in mixing large size cold stone mixtures.

The mixer end glands are equipped with stuffing boxes through which the mixer shafts pass. These stuffing boxes prevent the sand and stone from working into the mixer bearings.

The mixer shafts are made of nickel steel.

The bearings are fitted with Timken Roller bearings.

The liners are made of cast manganese in six pieces.

The mixer gate is made of manganese steel, supported by a cast steel bar.

The teeth are two piece with steel shanks and manganese tips.

The CUMMER
Steam Jacketed Mixers

400 lb., 700 lb., 1000 lb., 1200 lb. capacity

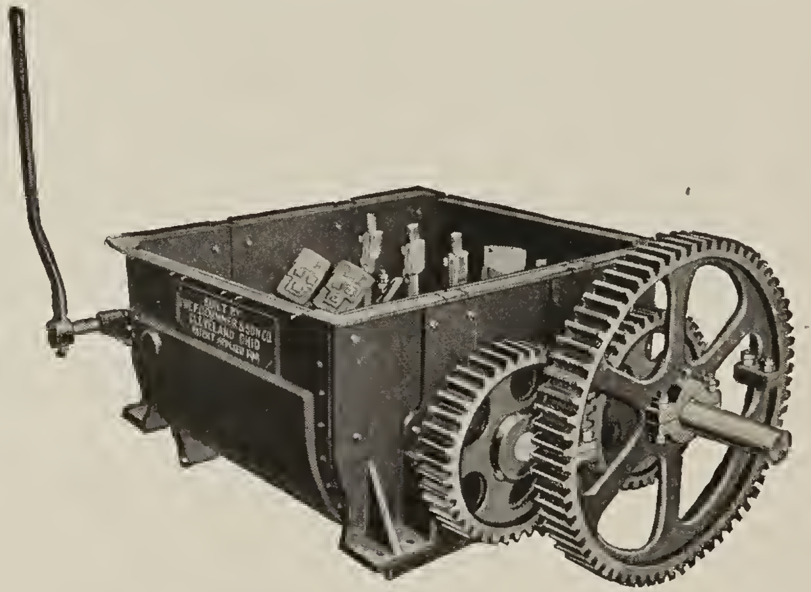
Equipped with steam or hand operated gates.

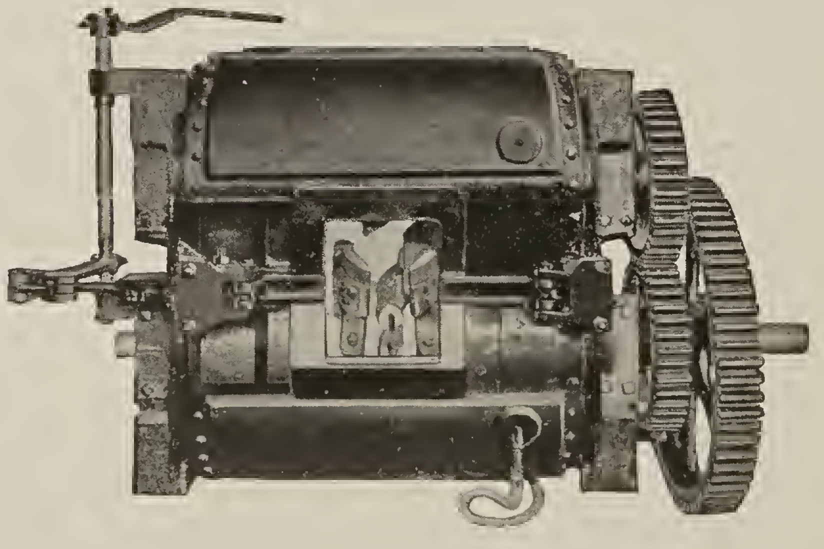
The mixer end glands are equipped with stuffing boxes same as on the heavy duty mixers.

The bearings are fitted with removable metal liners.

The liners are made of cast manganese steel in six pieces.

Mixer teeth are made in two pieces with steel shanks and manganese tips.



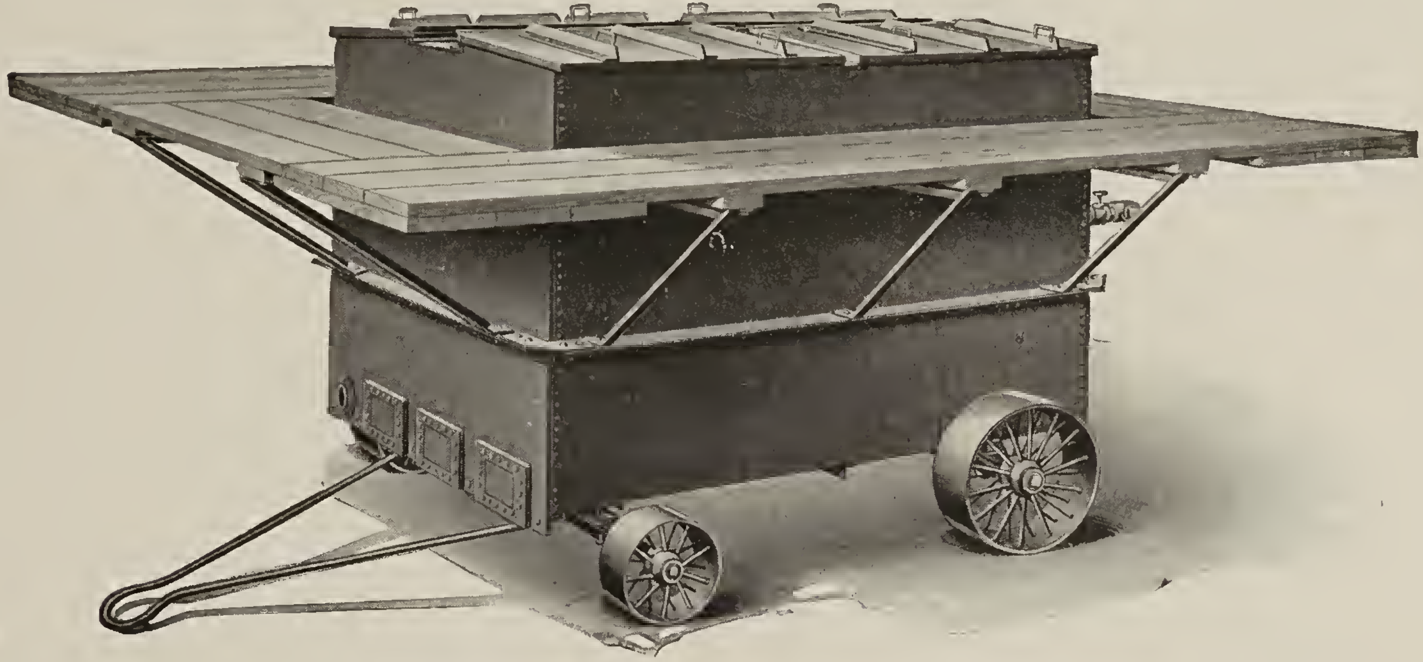


Botton view showing the full opening available when gate is open.

CUMMER PLANTS NEVER WAIT FOR HOT SAND

THE F. D. CUMMER & SON COMPANY

Cleveland, Ohio, U. S. A.

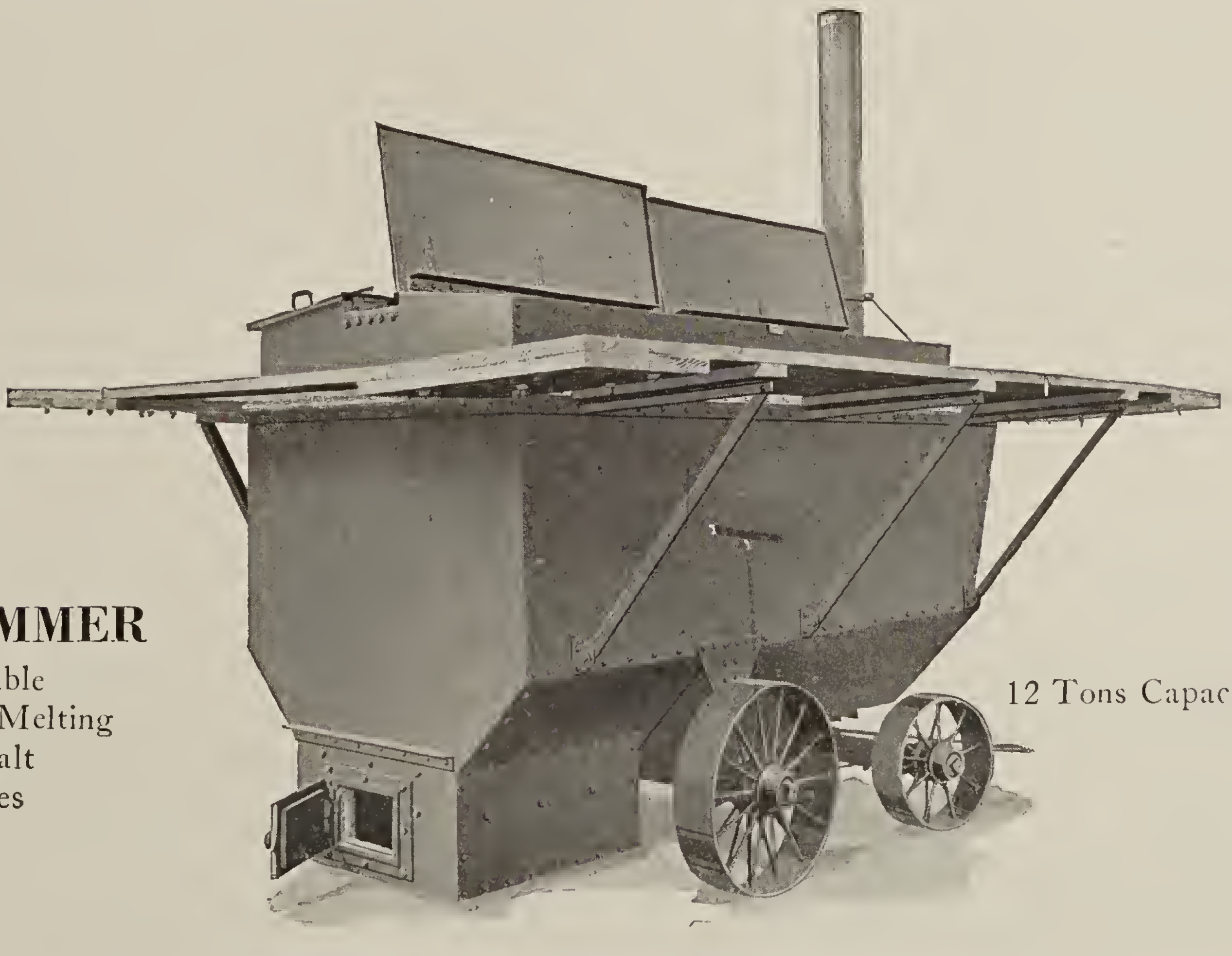


CUMMER Steam Melting Asphalt Kettles

PORTABLE IN 3 SIZES — 6, 12 and 15 tons.

STATIONARY IN 3 SIZES — 15, 20 and 25 tons.

Equipped with electrically welded continuous coils, clean-out doors and rain-proof hinged covers.



CUMMER

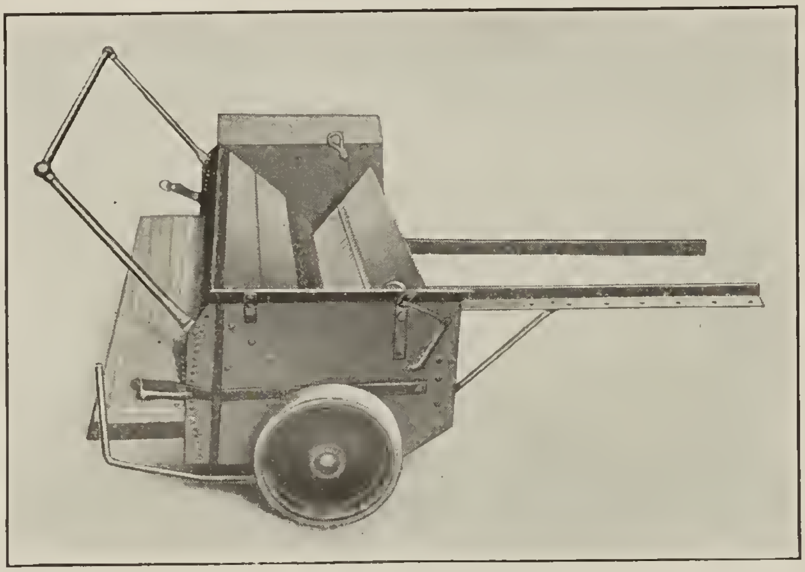
Portable
Fire Melting
Asphalt
Kettles

12 Tons Capacity

CUMMER PLANTS NEVER WAIT FOR HOT SAND

"HANDY SANDY" TRAILER SPREADERS

(Two Models—Model 66 and Model 80)



MODEL 66 "HANDY SANDY"

For trucks up to 1½ tons and inside body widths up to 5'6"

Length overall—7'4½"
Width of hopper—34 inches.
Height from ground—34 inches.
Capacity—1 Ton.
Tires—22 x 4½ Solid.
Shipping weight—1400 lbs.

The Model 66 "Handy Sandy" will spread any mineral material such as sand, salt, calcium chloride, slag, stone, cinders, etc., whether wet or dry of uniform size or mixed.

It may be used with any truck which has an inside body width of 5'6" or less with rear sill or edge not less than 18 inches, or more than 36 inches from the ground when in dumped position, and may be hooked to rear axles of such trucks as Fords, Chevrolets, Reos, etc., without adaptors if desired.

Shipped with two carrying chains complete ready to use.

MODEL 80 "HANDY SANDY"

For 1½ ton trucks and up, and inside body widths up to 7'

Length overall—102 inches.
Width of Hopper—54 inches.
Height from ground—43 inches.
Capacity—1½ yards.
Tires—29 x 5 solid.
Shipping weight—1700 lbs.

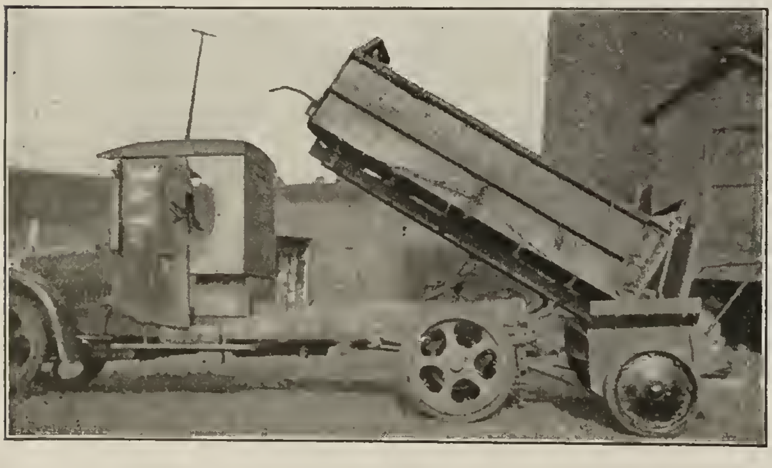
The "Handy Sandy" units were designed for use in secondary coverings in surface-treatment work; for dusting bleeding roads; for "dressing" shoulders; for resurfacing gravel, cinder, and shell roads, for covering ice; filling base courses in water-bound, and other macadam construction; for calcium chloride treatment on dusty highways; in fact, for any job where material is to be uniformly distributed.

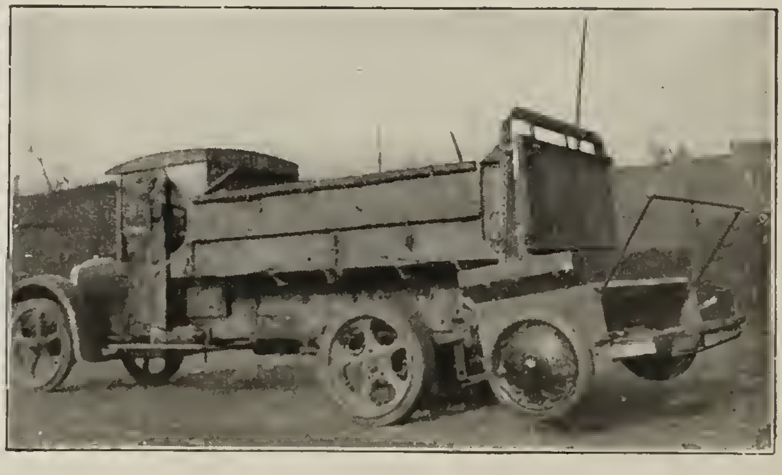
Ordinarily, an operator rides on the platform at the rear. His work is to manipulate the clutch for starting and stopping feed, and to regulate the depth of spread, by manipulation of levers at either side.

Anything from a mere sprinkle to 2½ inches in depth may be obtained, and the distribution may be heavier on one side than on the other if desired, by pushing one lever down and the other up.

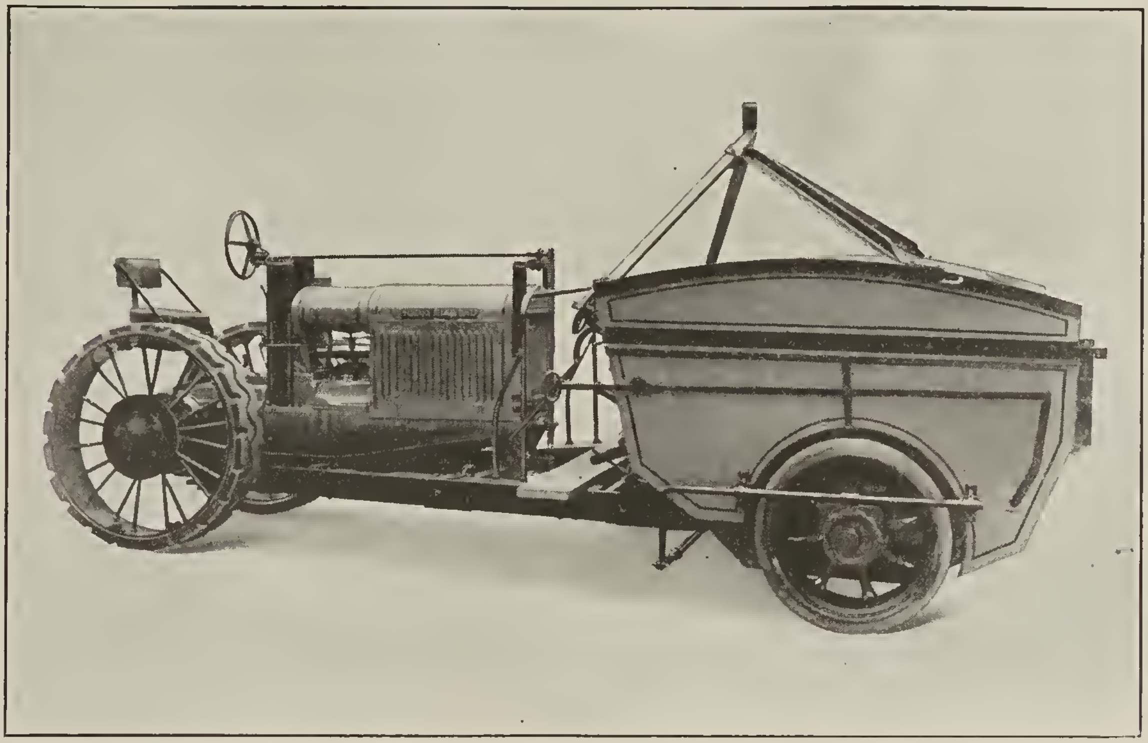
Method of Carrying "Handy Sandy"

A method of carrying the Distributor is here shown. It is attached to tailboard in dumped position by





"BIG SANDY"



chains furnished, which are adjusted to such length as to raise it from the ground some six to ten inches. This is convenient when traversing long distances or when backing or filling in close quarters.

Under conditions where a close regulation of distribution is not necessary, advantage may be taken of this method to start and stop the feed—it being obvious that if the clutch on Distributor is left in, when body is raised or lowered, distribution will take place only when wheels are in contact with the ground.

By this method, one man with suitable loading facilities may patrol miles of road whether in ice conditions in winter, or bleeding asphalt in summer.

"Big Sandy"

Width—10 feet.
Length—18 feet, 6 inches.
Weight, including Tractor—6 Tons.
Height—65 inches.
Tires—34 x 12 Front, 40 x 10 Rear.
Capacity—Five yards.

"Big Sandy" which spreads ahead of its own wheels is built ten feet wide, and spreads slightly more than ten feet in order to cover the average State Highway in two laps.

It is designed primarily for covering tar and asphalt in the building and maintenance of bituminous roads, and as such has no equal, distributing uniformly any kind of surfacing material at any depth desired, and because the wheels govern the distributing mechanism delivers the same quantity at any speed.

Whether the material be wet or dry does not affect it, and even large pieces of foreign matter make no difference to this versatile unit.

Regulating Distribution

The distributing mechanism of "Big Sandy" is simplicity itself. A revolving roll, actuated by the wheels and controlled with a clutch, carries the material through a steel wire brush, the pressure of which against the roll determines the amount that is deposited on the road surface. This pressure may be varied at will, and while closely regulating, the flow of material allows large pieces and foreign matter to pass through. Under no conditions will the machine clog.

The distributing roll is eight feet long, and the remainder of the width is spread with the two wheels—they having independent controls. Eight slides for the roll, and one for each wheel, enable the operator to selectively control the distribution from one foot up to ten, and thus meets all the requirements of this type of work.

Steering

Because the front wheels of "Big Sandy" must do their part of the distribution, both to prevent them from picking up the tar or asphalt, and also that distribution may be had directly to the curb or shoulders of the road, it became necessary to devise a unique method of steering; namely, that of turning the driving wheels, which in this case, meant the whole power plant.

Through proper gearing this is made as easy as any large truck with this advantage. The Power Wheels Are Always Pointing In The Direction In Which They Are Driving, which eliminates steering thrust and enables handling of this big unit in the peculiar conditions under which it works.

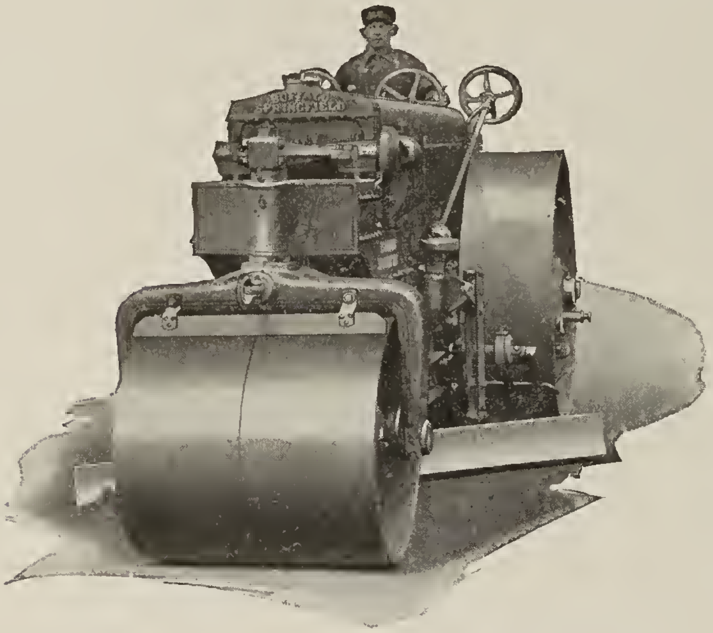
It is but the work of an hour to attach the tractor, and it may be as easily removed when the front wheels may be replaced, together, with the regular steering gear and the tractor used for other purposes.

However, with shoulder maintenance work always in order, and with winter sanding in our northern States, at least "Big Sandy" may be kept busy the year around.

Loading

"Big Sandy" will spread all the material which ordinarily can be brought to it, so that loading becomes of paramount importance. It is possible to drop a five-ton load into it from a truck of suitable height.

BUFFALO-SPRINGFIELD
Multiple Cylinder Motor Rollers



Buffalo-Springfield Three-Wheel Roller with Air Pressure Scarifier and Grading Blade

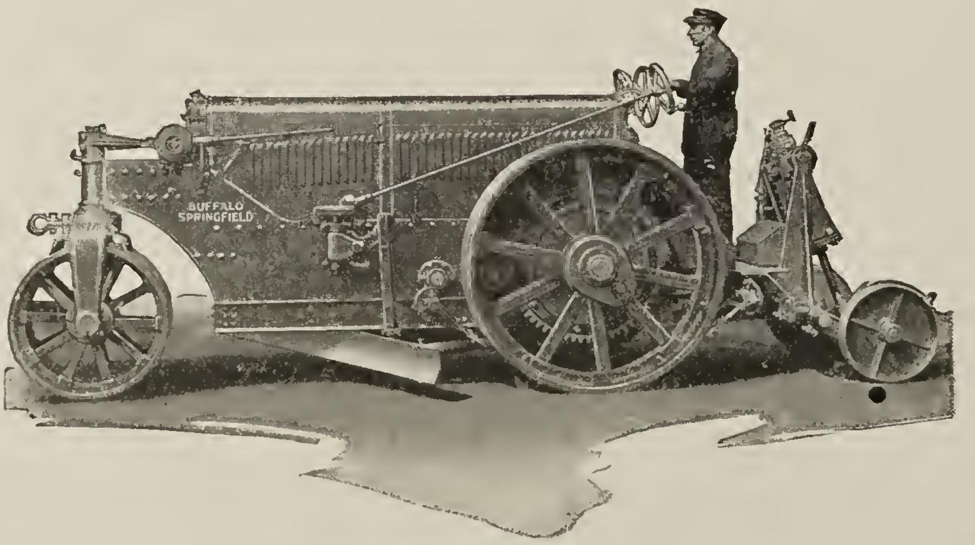
FOR nearly forty years the efforts of The Buffalo-Springfield Roller Company have been concentrated on the production of road and street rollers of the highest quality, and as a result this company has grown to be the largest manufacturer of rollers in the world. Its plant is equipped solely for the production of high grade rollers, and its engineers and workmen are roller-building specialists. The effect of this specialization is the preference for Buffalo-Springfield rollers by experienced engineers and constructors.

The majority of purchases of these machines are repeat orders from users who are convinced that they cannot obtain other rollers that would equal Buffalo-Springfields in utility, long life, and reliability.

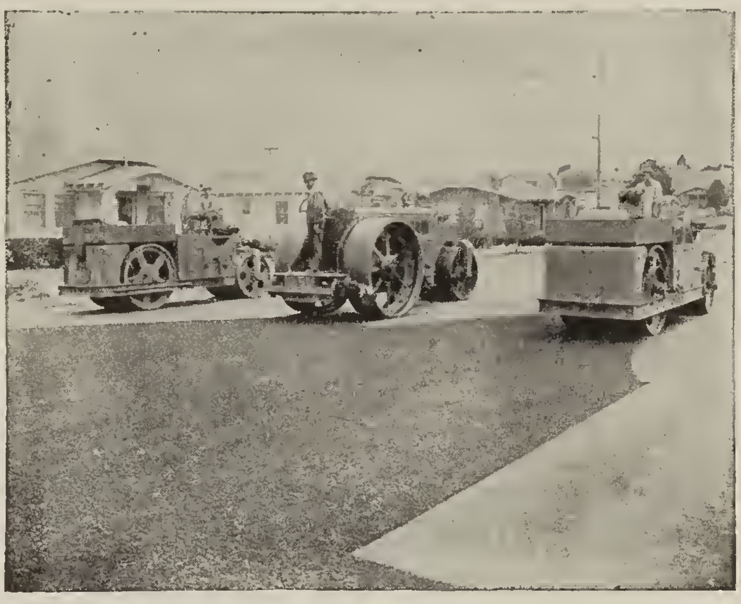
This Company was the first manufacturer to produce road and paving rollers propelled by multiple cylinder internal combustion motors, and during the past twenty years has developed such machines until now they constitute a very complete line of rolling equipment. It includes tandem rollers in sizes weighing from two and one-half tons to twelve tons and three-wheel rollers weighing from four to eighteen tons.

The three-wheel machines are of the enclosed type, with motor, transmission, air compressor, and tank housed under a removable hood. At the front are the motor and radiator, and at the rear is the dash board. The frame is patented and has heavy reinforcing channels extending the full length of the frame plates and rearward to the drawbar, which supports the scarifier if the roller is so equipped. The frame plates are thick and are notched to permit the removal of the main axle without pulling off or destroying either of the drive hubs.

The motor is started from the operator's position where he is within reach of the motor controls. The reverse is entirely through friction clutches requiring no shifting of gears for changing direction, but the roller is equipped with change speed gears and adjustable governor control to provide the wide range of speed and tractive power necessary for all classes of rolling, scarifying and road travel. The clutches are adjustable by hand without tools and may be quickly relined without the removal of the motor, clutch, or transmission. The two clutches are controlled by one lever at the operator's right hand and



Buffalo-Springfield Three-Wheel Roller with Grading Blade Raised



Rolling Sheet Asphalt with Buffalo-Springfield Three-Wheel and Tandem Motor Driven Rollers

reversing can be accomplished without shock. As these rollers are much used in the rolling of sheet asphalt and other hot-laid pavements, the smoothness of the reverse is of the greatest importance.

The transmission consists of large gears of wide face made from the finest alloy steel and are machine-cut. They are mounted on special lapped steel shafting running in anti-friction bearings. A large brake drum is mounted on the main countershaft, where it has great leverage and positive control of the drive rolls. The rolls are of standard tension spoke type and are of large diameter. The rims of the drive rolls are perforated with tapered reamed holes, in which can be inserted spikes for loosening old material or lugs for furnishing extra traction. These holes are closed with tapered plugs when picks or lugs are not in use. Special rolls for asphalt and bituminous concrete rolling can be provided.

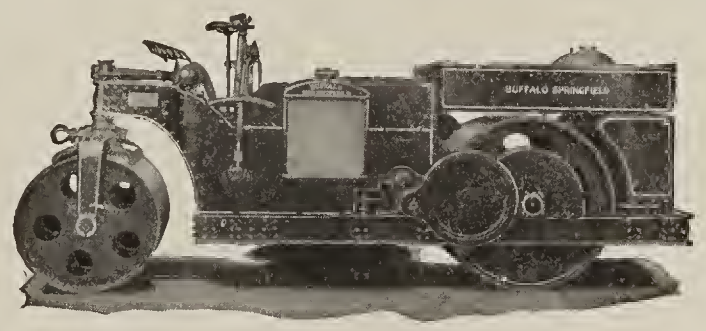
As the majority of three-wheel rollers are now called upon to scarify as well as roll, Buffalo-Springfield three-wheel machines, when so ordered, can be provided with air compressor, air tank, and air cylinder scarifier attached to the rear end of the roller frame. Such scarifiers are a source of great economy in maintenance work and in the preparation of subgrade for new construction. Each tooth of a Buffalo-Springfield pressure scarifier is held by a separate tooth arm, permitting the flow of the loosened material between the teeth. When the scarifier is not in use, it is suspended by a hook without need of pressure in the scarifier cylinder.

Buffalo-Springfield motor-driven three-wheel rollers are equipped with a grading attachment if specified by the purchaser. Such blades are a great convenience for certain classes of work and can be easily removed if not needed.

The Buffalo-Springfield motor-driven tandem rollers are constructed with short wheel base, low center of gravity, spur gear main drive, and a wide range of speed. These machines are equipped with both power and hand steering gear. The transmission, with the exception of the three fast running gears, consists of spur gears mounted on shafting running in anti-friction bearings. As in the case of the three-wheel rollers, Buffalo-Springfield tandems change direction by a single movement of one lever acting upon the two clutches. The rims of the rolls are either cast or machine-turned steel, as ordered. The rolls can be equipped with a water spray to be used in the rolling of hot bituminous pavements.

Nothing has been left undone to make Buffalo-Springfield motor rollers unequalled for service.

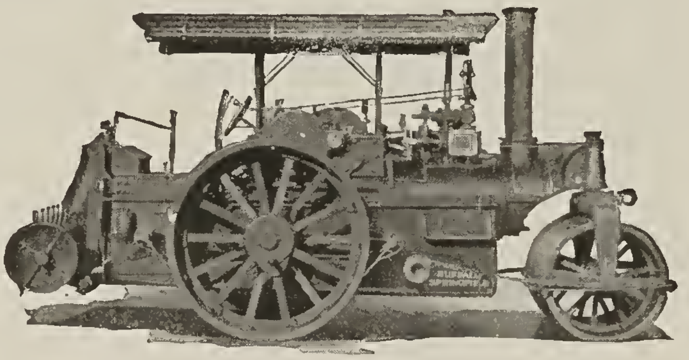
Detailed specifications of any size of three-wheel or tandem roller will be furnished on request.



Buffalo-Springfield Motor-Driven Tandem

BUFFALO-SPRINGFIELD

Steam Rollers



Buffalo-Springfield Three-Wheel Steam Roller with Steam Pressure Scarifier

Buffalo-Springfield three-wheel steam rollers are more extensively used than any others. The first three-wheel steam rollers used in America were imported from England between the years 1870 and 1890. During the early "nineties" five makes of three-wheel steam rollers were produced in the United States, of which all but two were discontinued before the year 1905. The two survivors were the Buffalo-Springfield and the Kelly-Springfield, both of which are now products of this Company.

These embody all the most desirable features of their forerunners as well as the improvements in materials and design that years of experience have taught are desirable in steam rollers to meet the demands of modern road and street construction and maintenance.

The boilers of all Buffalo-Springfield steam rollers are made in accordance with the laws of all states regulating the construction of steam boilers to be operated within their boundaries, and they are built and tested under the supervision of a commissioned inspector for such states.

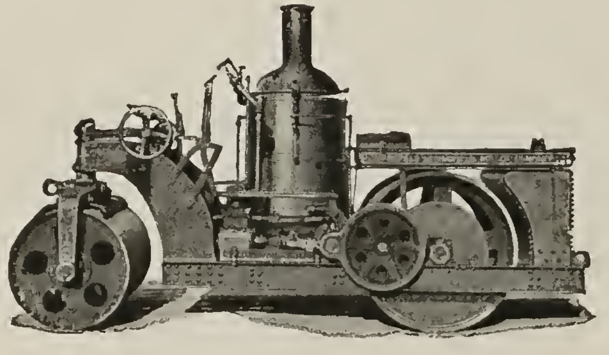
The engines of all Buffalo-Springfield steam rollers are of the twin-cylinder type with reversing valve gear Change speed gears are also a feature of all Buffalo-Springfield three-wheel rollers. The transmission gears are of high carbon steel mounted on steel shafting accurately turned and lapped, and running in renewable bearings. The main axle is of special alloy steel of extraordinary strength. The periphery of the drive wheels of all Buffalo-Springfield three-wheel rollers is pierced by a number of taper-reamed holes for holding picks or lugs, which may be used in breaking old pavements or to give added traction. When such picks or lugs are not in use the holes are closed by accurately fitted plugs.

In addition to the usefulness of these machines for rolling, they can be equipped with Buffalo-Springfield steam pressure scarifiers rendering them capable of maintenance work and of preparing in the most economical manner the subgrade for new construction.

Many Buffalo-Springfield steam rollers are used with special wide wheels for rolling bituminous and asphaltic pavements, including the first rolling of sheet asphalt.

Buffalo-Springfield three-wheel rollers are built in sizes ranging in weights from ten to twenty tons.

The first rollers built in America were of the tandem



Buffalo-Springfield Tandem Steam Roller

type and were designed by Andrew Lindelof of New York in 1873. The engine was mounted vertically and the transmission consisted only of a bevel gear and pinion.

Rollers of similar design were later made by this Company and several other manufacturers. Over twenty years ago this Company recognized the objectionable features of the vertical engine with longitudinal crank shaft and the two-gear beveled transmission of low ratio, as they made a top-heavy machine with a rocking vibration injurious to the asphaltic surfaces on which they were usually employed. A new Buffalo-Springfield design was created providing for a double engine horizontally mounted on the main frame, transmitting power to the drive roll through all spur gearing. This arrangement gave a low center of gravity and a transverse crankshaft that freed the roller from vibration and fitted it for all classes of work for which tandem rollers are preferable. The Buffalo-Springfield steam tandem design has been imitated in America and abroad.

Buffalo-Springfield tandem steam rollers are used for rolling block and plastic pavements and for gravel and macadam drives and walks. They are built in sizes ranging in weights from two to thirteen tons. They are most extensively employed for rolling asphaltic and bituminous concrete and for sheet asphalt.

All Buffalo-Springfield tandem steam rollers weighing five tons or more are equipped with separate steam steering engines facilitating rapid handling on hot material. All sizes weighing more than six tons are also equipped with governor control for the main engine. Such a control is preferred by many operators and it enables the engine to be used for belt power if required.

The frames of Buffalo-Springfield tandem rollers are complete in themselves and do not employ the water tank for the rear member. To the rear channel is attached a strong drawbar, and a clevis is attached to the front yoke pin so that the roller can be used for hauling in either direction.

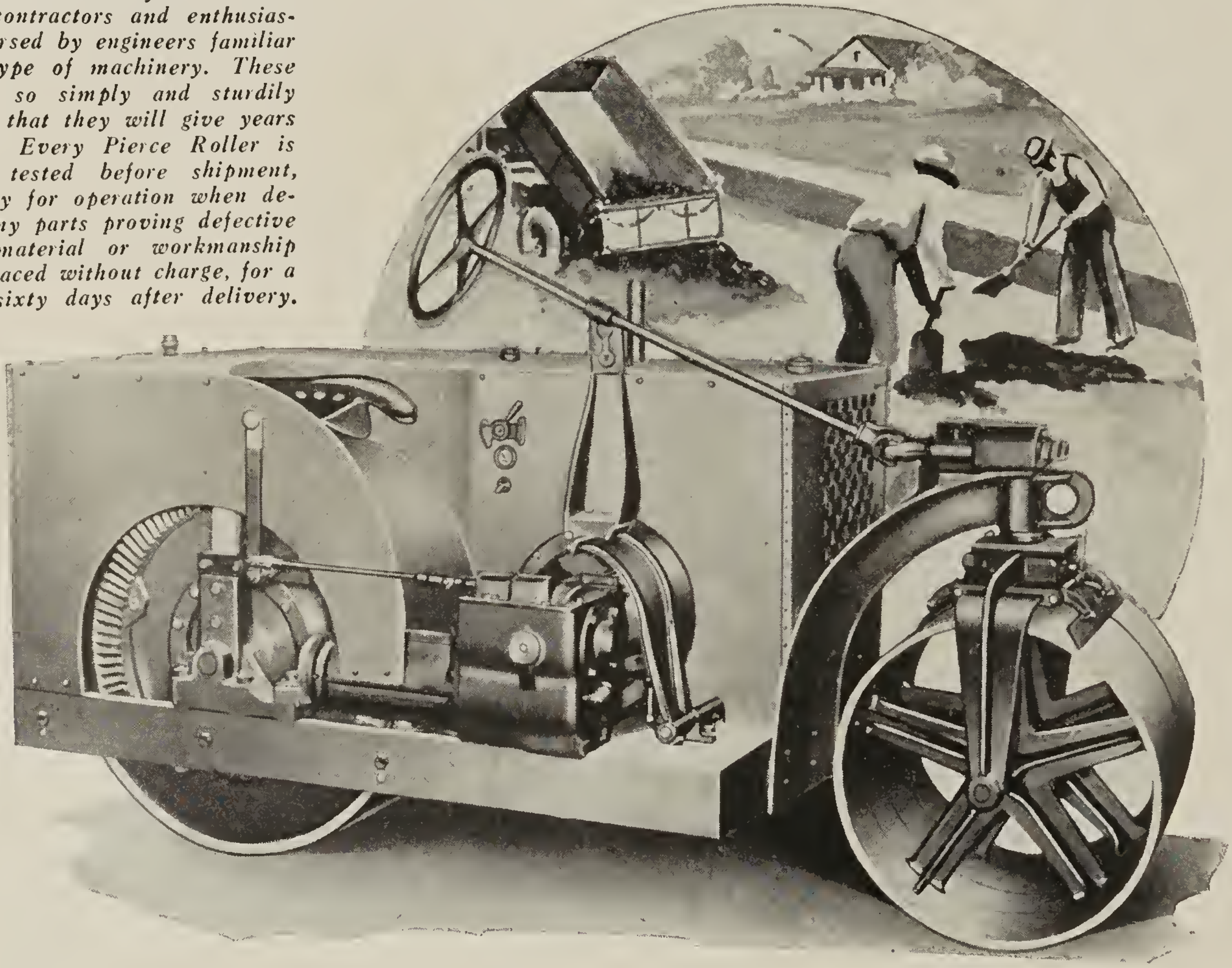
The engine is of the open-top type, which permits access to all bearings for lubrication and adjustment, notwithstanding the proximity of the boiler.

Buffalo-Springfield tandem rollers have been adopted as their standard equipment by the majority of paving contractors in the United States, and they occupy a like position of leadership in the paving equipment of the most progressive municipalities.

The First Buffalo Steam Roller Built in 1895 and Still in Service

PIERCE ROLLERS

Pierce Rollers were developed by an old established Company that is financially responsible. They have been tested by contractors and enthusiastically endorsed by engineers familiar with this type of machinery. These rollers are so simply and sturdily constructed that they will give years of service. Every Pierce Roller is thoroughly tested before shipment, and is ready for operation when delivered. Any parts proving defective either in material or workmanship will be replaced without charge, for a period of sixty days after delivery.



The Pierce Big Bear

A STURDY, compact, 3-ton roller designed for small construction jobs, patching asphalt, rolling driveways, leveling ditches, rolling highway burms, etc. The 34″ rear roller permits rolling between concrete forms or car tracks. Provision has been made for watering both rollers when used for asphalt surfacing. Ground pressure 140 pounds per lineal inch on rear roller. Heavy steel housing encloses and protects all moving parts.

Specifications

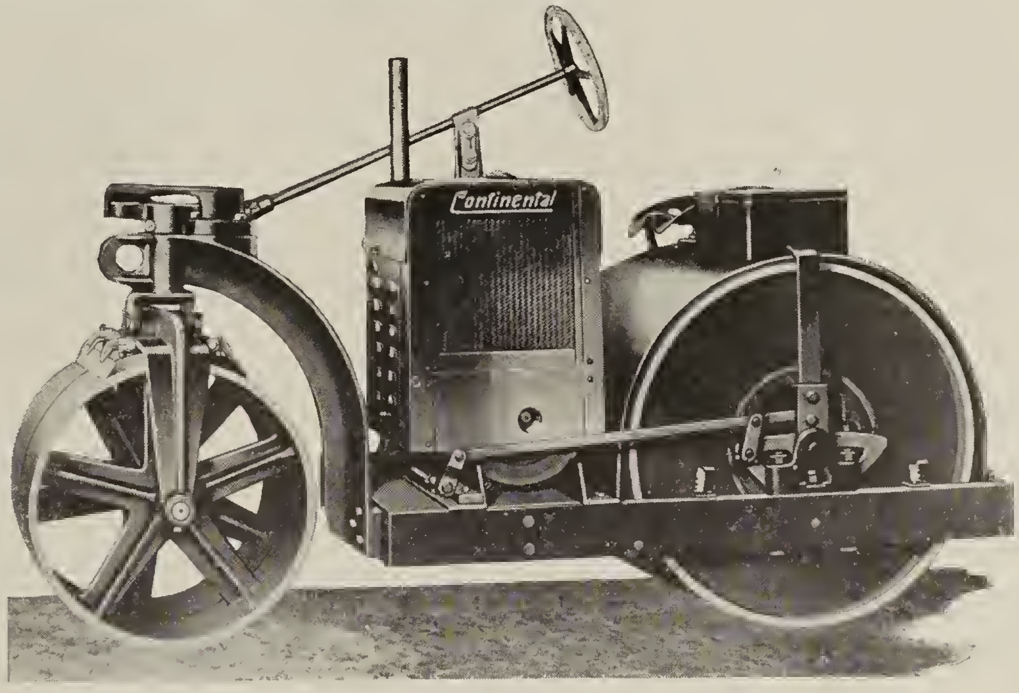
Motor—Continental Red Seal, four cylinders, 3⅜″x4¼″, 12-18 H.P.
Cooling—Water pump circulation, Young Radiator.
Oiling—Presure pump.
Ignition—Eisemann Magneto with impulse starter.
Carburetor—Zenith.
Governor—Pierce variable speed.
Gasoline Capacity—5 gallons.
Clutch—Borg & Beck dry plate.
Transmission—Pierce sliding gear, New Departure bearings.
Gear Shift—One speed forward or reverse.
Brake—Internal expanding.
Water Tank—15 gallons with leads to both rollers.
Rear Roller—Width 34″, diameter 36½″.
Front Roller—Width 24″, diameter 26″.

See Next Page for Smaller Sizes

PIERCE ROLLERS

The Pierce
Middle-Size Bear

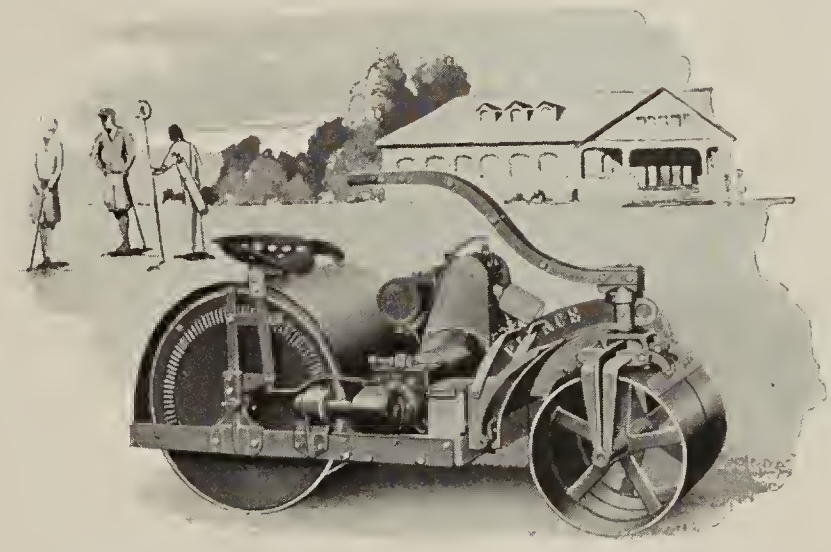
THIS model is extremely popular for parks, school grounds, airports, race tracks, polo grounds, tennis courts, golf courses, cemeteries, and for all work where the Baby Bear is not quite heavy enough. The roller as shipped from the factory weighs 3,000 pounds. The rear roller is empty and can be filled with water, adding 1,000 pounds to the weight.



This roller can be operated in small spaces and is very easy to handle. Rear roller width 34″, diameter 36″. Weight with rear roller empty, 3,000 pounds; with rear roller filled with water, 4,000 pounds.

Specifications

Motor—Continental Red Seal, two cylinder 3⅜″ x 4¼″, 8-12 H.P.
Cooling—Thermosyphon.
Oiling—Pressure feed.
Ignition—Magneto with impulse starter
Carburetor—Zenith.
Governor—Pierce variable speed.
Gasoline Capacity—3 gallons, sufficient for six hours' work.
Clutch—Dry plate.
Transmission—Sliding gear, running in oil, with New Departure ball bearings.
Gear Shift—One speed forward or reverse.
Brakes—Internal expanding.
Lubrication—Alemite.



Total weight of Baby Bear Roller, 1350 *pounds without driver; width over-all,* 28″; *length* 5′ 8″; *rear roller, width* 24″, *diameter* 26″, *front roller width* 20″, *diameter* 17″.

The Pierce
Baby Bear

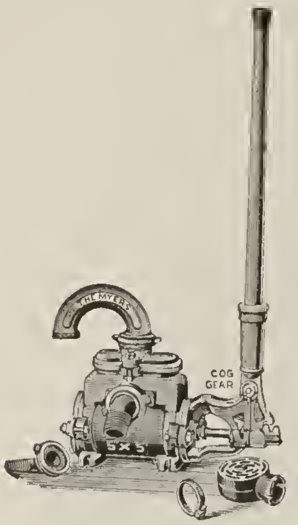
A SMALL power driven roller for lawns, golf greens, parks, tennis courts, school grounds, private estates, etc. Same high grade workmanship as in the heavier rollers. Narrow frame permits rolling within 3 in. of curb. Pull rings front and rear. Very easy to handle under all conditions. Can be operated without difficulty by a boy of twelve. Adjustable scrapers on front and rear rollers. Rear roller alone weighs 900 pounds.

Specifications

Motor—Briggs & Stratton, one cylinder, 2¾″ x 3¼″, air-cooled.
Oiling—Splash circulation.
Ignition—Flywheel magneto.
Carburetor—Tillotson.
Gasoline Capacity—One gallon, sufficient for five hours.
Clutch—Cone type.
Transmission—Sliding gear.
Gear Shift—One speed forward or reverse.
Lubrication—Alemite.

PIERCE GOVERNOR COMPANY
Anderson, Indiana

MYERS TANK PUMP



This pump was designed to that all working parts can be easily reached for inspection or repairs. By simply loosening one bolt and removing cap all valves are exposed which permits quick removal when necessary. A wrench is the only tool needed. It is fitted for 2-in. suction hose, and both suction and discharge are tapped for 2-in. iron pipe. Drip cocks are provided for draining cylinder to prevent freezing. Spout is reversible.

Cylinders are 5-in. diam. with 5-in. stroke. Capacity 2,000 gallons per hour. Very compact and has large, direct waterways. Valve seats are brass and valves are metal faced with rubber. Cog gear drive makes easy operation. Wgt. 76 lbs.

Pump with hose attachments, hose band, strainer and nozzle	$20.70
Pump with hose attachments, hose band, strainer but without nozzle. Each	$20.30

DEMPSTER TANK PUMP

The Dempster Tank Pump is a double-acting pump built with all valves grouped in the top of the pump where they can be easily removed by taking out 2 bolts and removing the top cap from the pump.

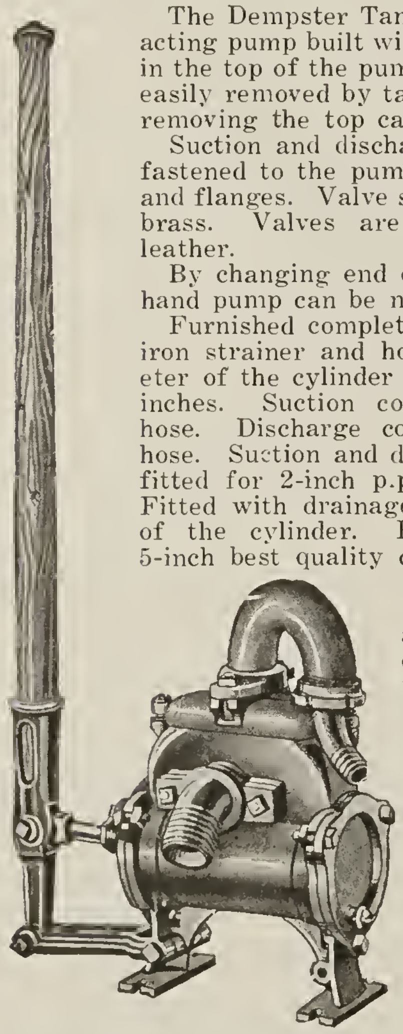
Suction and discharge connections are fastened to the pump by means of bolts and flanges. Valve seats are heavy sheet brass. Valves are metal faced with leather.

By changing end caps a right or left-hand pump can be made.

Furnished complete with a 2-inch cast iron strainer and hose band. The diameter of the cylinder is 5 inches, stroke 5 inches. Suction connection for 2-inch hose. Discharge connection for 1-inch hose. Suction and discharge can also be fitted for 2-inch pipe when so ordered. Fitted with drainage plugs at each end of the cylinder. Plunger fitted with 5-inch best quality cup leathers. Pump will be shipped for 2-inch hose suction and 1-inch hose discharge, unless otherwise ordered.

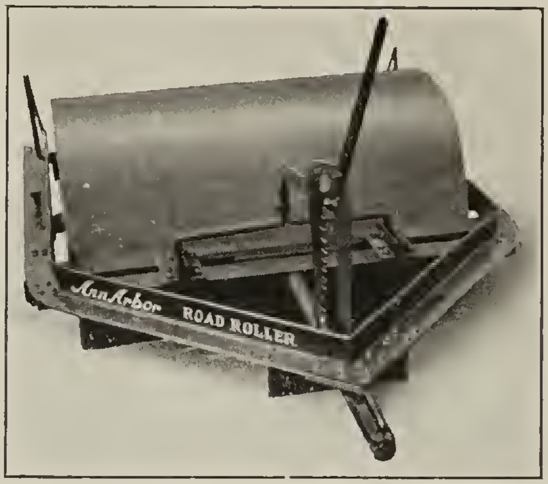
Weight, 70 pounds.

Each $20.00



15 and 20 ft. length woven Jacket Cotton covered suction hose, with enlarged ends. 2-inch size for the above pumps. Per foot	$ .96
15′ 2″ Rough Bore Suction Hose with Nipples and bands	$20.00
20′ long, 2″ Rough Bore Suction Hose with Nipples and bands	$25.00
2″ Foot Valve and Strainer	$ 3.00

ROAD ROLLERS



The Ann Arba Road Roller is just the thing many contractors have been looking for to solve their rolling problems. It is a steel shell roller which can be shipped to the contractor economically and which may be filled with concrete until it weighs several tons. These rollers have come into demand by every airport in the United States. They not only smooth down the bumps with the tremendous pressure, but they are used in the spring to give the sod a firm rooting in the earth, which always makes the runway smooth.

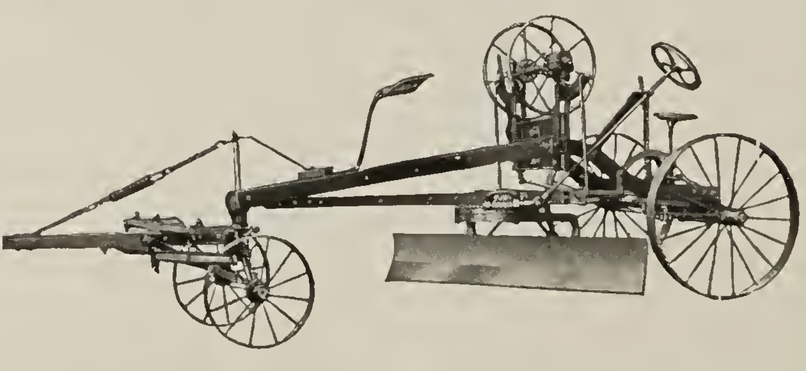
These rollers are built in three sizes, 4, 6 and 10 ton when filled with concrete. The 6 and 10 ton sizes may be equipped with brakes or can be sold without brakes. Rollers with split rollers can be furnished special.

Size	Frame	Shell	Bearings
4-ton	4x4x½″	5x42″	4x2½″
6-ton	5x5x⅝″	6′x48″	5x3″
10-ton	5x5x⅝″	6′x60″	5x3″

Size	Weight With Brakes	Weight Without Brakes
4-ton		1850-lbs.
6-ton	3000 lbs.	2800 lbs.
10-ton	3350-lbs.	3000 lbs.

These Rollers are equipped with a drum scraper. The weights given are without the concrete filling, which lessens the transportation charges.

BLADE MACHINES

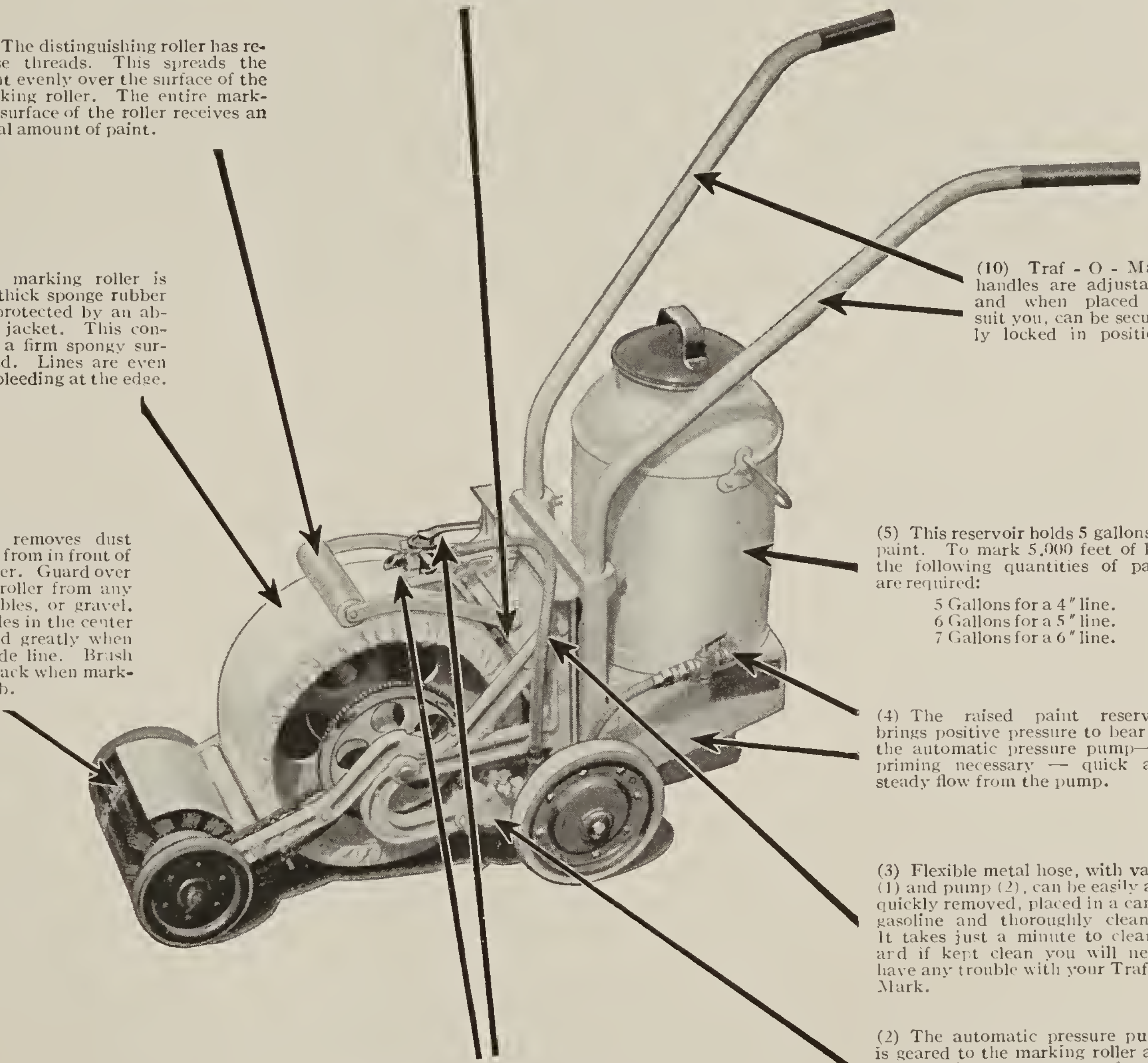


Write for Catalog Describing Graders. We have a complete line.

The Littleford TRAF-LB-MARK

The Traf-O-Mark is undoubtedly the outstanding machine for center line, safety zone, parking space and all sorts of traffic line marking. The paint flow is entirely automatic. Cleaning after use is easy and simple.

Check over the features outlined below—Compare the Traf-O-Mark with any other marker. The canvas covered sponge-rubber marking roller makes a sharp even line on cement or sheet asphalt paving—Follow the arrows and find out how it is done.



(9) A scraper at the back of the marking roller removes any dirt, pebbles, or gravel picked up by the roller—a smooth surface with a fresh even coat of paint marks the lines.

(6) The distinguishing roller has reverse threads. This spreads the paint evenly over the surface of the marking roller. The entire marking surface of the roller receives an equal amount of paint.

(10) Traf - O - Mark handles are adjustable and when placed to suit you, can be securely locked in position.

(7) The heavy marking roller is cushioned with thick sponge rubber held firm and protected by an absorbent canvas jacket. This construction offers a firm spongy surface to the road. Lines are even and sharp—no bleeding at the edge.

(8) This brush removes dust and loose gravel from in front of the marking roller. Guard over brush protects roller from any flying dirt, pebbles, or gravel. The white bristles in the center of the brush aid greatly when following a guide line. Brush can be thrown back when marking close to curb.

(5) This reservoir holds 5 gallons of paint. To mark 5,000 feet of line the following quantities of paint are required:

5 Gallons for a 4″ line.
6 Gallons for a 5″ line.
7 Gallons for a 6″ line.

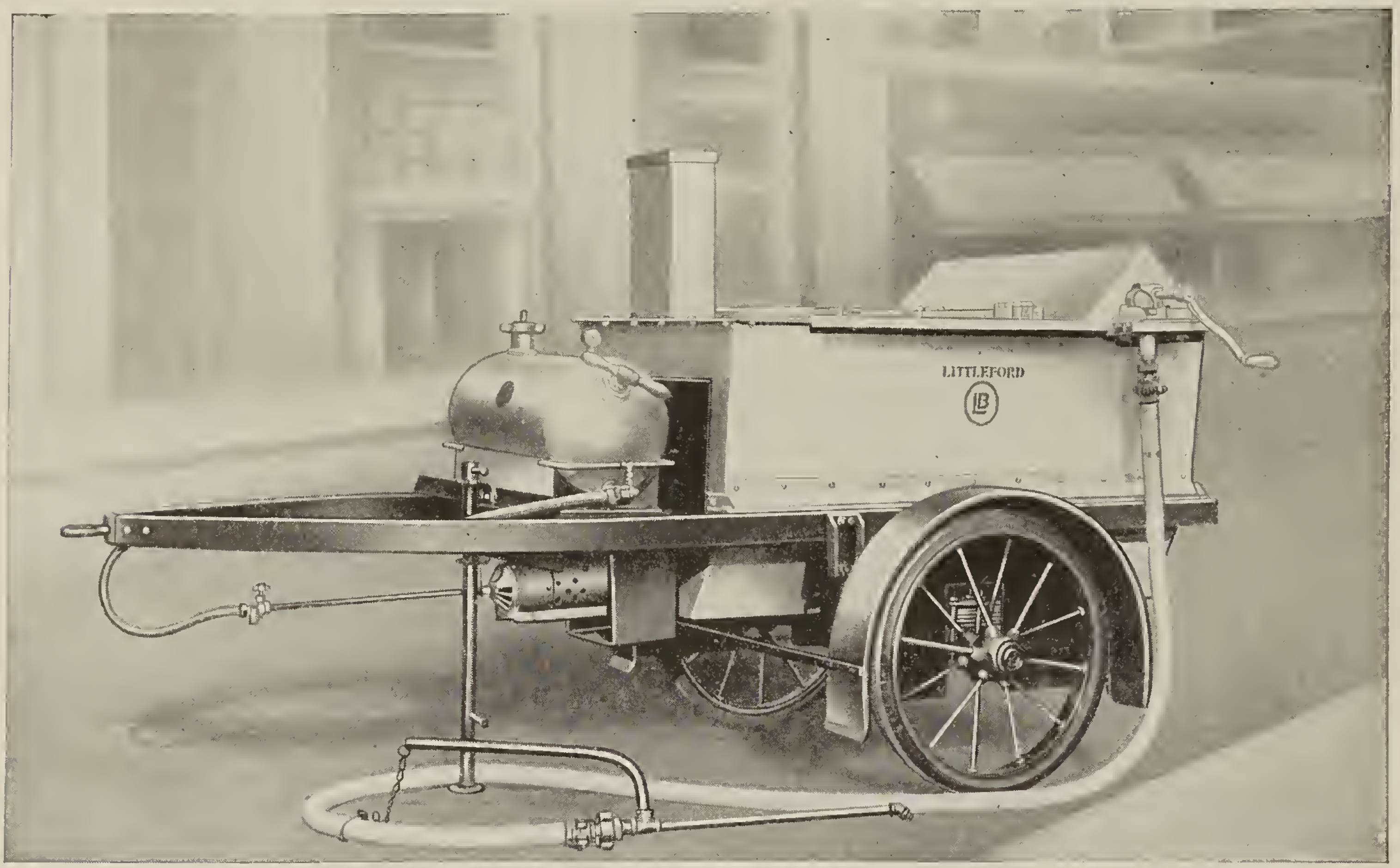
(4) The raised paint reservoir brings positive pressure to bear on the automatic pressure pump—no priming necessary — quick and steady flow from the pump.

(3) Flexible metal hose, with valve (1) and pump (2), can be easily and quickly removed, placed in a can of gasoline and thoroughly cleaned. It takes just a minute to clean it and if kept clean you will never have any trouble with your Traf-O-Mark.

(2) The automatic pressure pump is geared to the marking roller and pressure is always correct for the speed of the machine. Operator can push it as he pleases—when he stops, the paint stops.

(1) Flow of paint from outlet is adjusted here. After the valve has been regulated it is unnecessary to make any further adjustment. Paint is discharged on to marking roller.

LITTLEFORD BROS., Cincinnati, Ohio LB



The new LB No. 84-HD Heavy Duty Oil Burning Maintenance Kettle fitted with LB Hand Spray Attachment. Steel tired wheels are standard equipment. Rubber tired wheels and heat guards extra.

Heavy Duty MAINTENANCE KETTLE *No. 84-HD*

WITH DOUBLE HEAT CIRCULATION AND SCREENED RESERVOIR SEMI-ELLIPTICAL SPRINGS, TIMKEN ROLLER BEARINGS

Heavy Duty Tar and Asphalt Kettle, No. 84-HD made in 110, 165 and 210 gallon sizes, is new. It can heat more rapidly and with greater safety than any other kettle of this type and approximate size.

Double Circulation—Burner at front end of kettle forces intense heat to rear of kettle. Heat cannot pass up until it reaches far end of kettle. It is then drawn by draft back to the vent stack at the front of the kettle. This is double circulation—the same as in our large 300 and 550 gallon oil burning kettles.

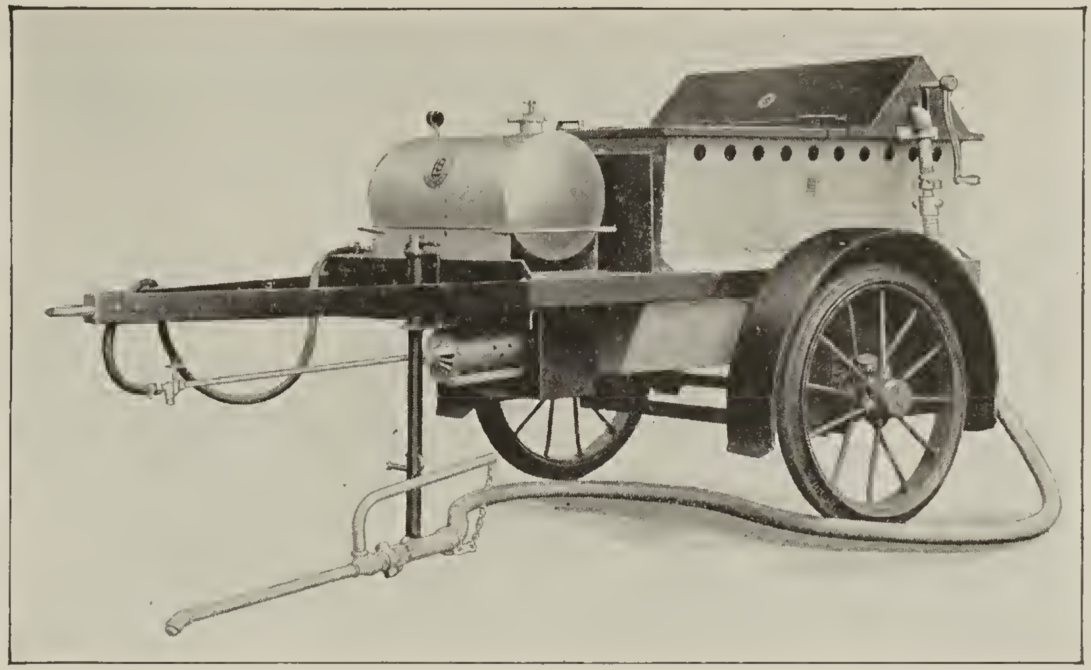
Screened Reservoir—The double heat circulation would not be fully effective were it not for the new screened reservoir in the melting tank. It is triangular in shape and extends full length of melting tank—heat can circulate completely around both hot and cold material. This kettle can be loaded with cold tar or asphalt to its full rated capacity and cold material can be added at any time—in large or small quantities—without chilling the hot, melted material.

Such construction places the new LB No. 84-HD Maintenance Kettle in a class by itself. But we have not stopped there. This kettle has the best all-around running gear ever put on a maintenance unit. Axle cushioned on eight leaf semi-elliptical springs; wheels Timken roller-bearing equipped; new flexible chassis that can withstand severe turning and backing. It is pulled by a cast-steel non-breakable pulling eye. Trail it as fast as you like.

And another thing—as the trailing speed has been increased more provisions have been made to eliminate splashing. Front, rear and sides at top of kettle have over hanging splash plates. Remember, too, that there are no vent holes—no places where material can splash or come in contact with heat and outside air. There can be no splash or flash—this kettle is safe. Let us send you prices.

LITTLEFORD BROS., Cincinnati, Ohio LB

The LITTLEFORD HAND SPRAY ATTACHMENT *for Penetration and Skin Patching, Shoulder Work, Widening Curves and Crack Filling*



No. 84-W Oil Burning Tar and Asphalt Kettle equipped with Littleford Hand Spray Attachment for penetration and skin patching, shoulder work and widening of curves.

USE your tar kettles to the fullest extent. Fit them with the Littleford Hand Spray Attachment. Don't use pouring pots on patch work! Spray the asphalt from the kettles onto the patch.

Furthermore—when you use the Hand Spray Attachment you apply asphalt to patches under pressure, and without loss of heat—just as a large pressure distributor applies it to the entire road.

Patching and shoulder work cannot be economically done with a large pressure distributor, but, by means of the Littleford Hand Spray you can get the same result over a small area as is obtained on a complete resurfacing job.

The Littleford Hand Spraying Attachment consists of a rotary gear pump, an easily operated hand crank, intake pipe with filter screen, fifteen foot highly insulated flexible metal hose, and a spray bar with removable tip.

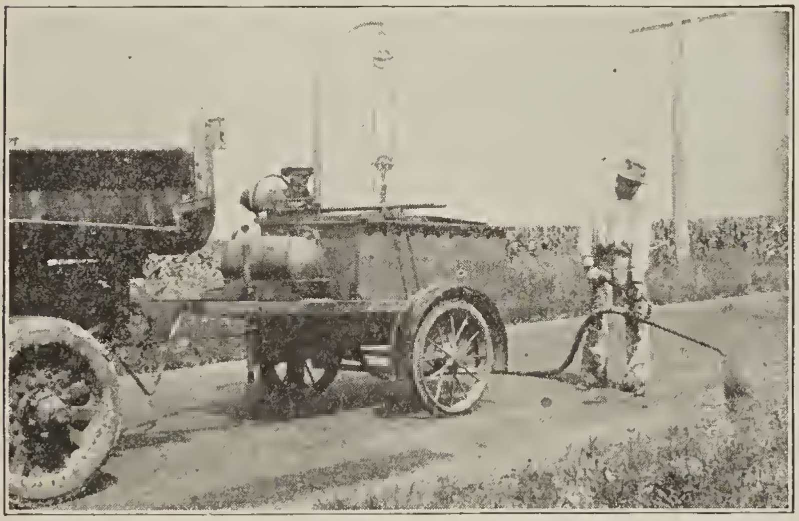
The spray bar has a spray tip which can be adjusted to make either a forward or crosswise fan shaped spray perfectly suitable for penetration and skin patching or shoulder work. This spray tip can be easily removed and a round hole nozzle used for expansion joint and crack filling. At slight additional charge a swirling high pressure nozzle can be furnished.

The pump cannot clog—it is at the bottom of the melting tank and completely submerged in hot material.

A filter at the intake prevents foreign material from entering the pump. The flexible metal distributing hose is highly insulated so that material will not congeal.

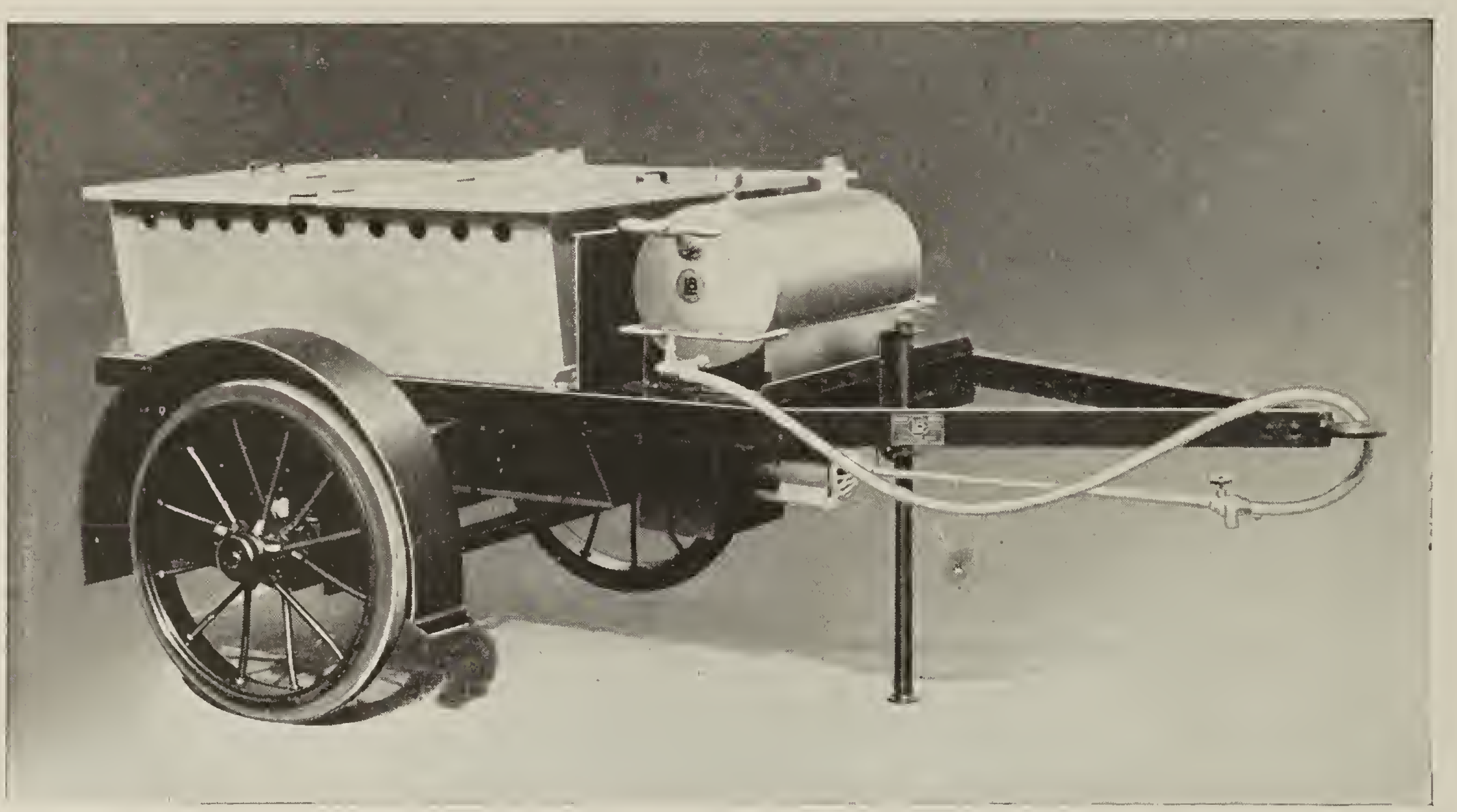
The new motor driven attachment eliminates all labor in connection with the operation of the pump and increases the efficiency of the outfit. It can be operated on a few cents a day. Described on page 7.

The Littleford Hand or Motor-Driven Spray can be fitted to tar and asphalt kettles of any size or make. Double the efficiency of your maintenance kettles with this equipment.



Many highway departments are availing themselves of the new patching service offered in the Littleford Hand Spray Attachment. The Ohio State Department of Highways has many of these units. The outfit shown here is being used to apply a binding coat to edge of road preparatory to widening shoulders.

LITTLEFORD BROS., Cincinnati, Ohio LB



No. 84-W, made in 110 and 165 gallon sizes. Equipped with straight roller bearings and coil springs.

No. 84-W MAINTENANCE KETTLE

THE No. 84-W melting tank, made of special analysis fire-box steel, is enclosed entirely within the furnace shell. The flame from the Littleford Oil Burner (generating from 1800° to 2100° of heat, depending on its size) is directed into the space between the furnace shell and the tank—intense heat is forced to the extreme end of the kettle, circulated around the tank and finally forced through the vent holes at the top of the furnace shell. Circulation of heat is complete—melting of material is rapid.

Quick draw-off? You can expect an 84-W Kettle to produce hot material within 10 to 15 minutes from the time of starting the burner. This, of course, depends on the melting point of the tar or asphalt being used. A daily production of from 600 to 1400 gallons (8 hour day) can be easily maintained.

The draw-off cock is protected by a large removable screen which completely covers the rear end of the kettle—no solid material can get to the outlet. The Littleford "No-Drip" draw-off cock is made of non-breakable, malleable iron and, when kettle is not in use, can be securely locked.

The cover is double hinged and can be opened at either end. By removing a few bolts it can be taken off altogether—an entire barrel of material can be placed in it at a time. Melted asphalt can't splash out—the top of the kettle is fitted with splash plates that prevent splashing.

The Littleford Oil Burner

The Littleford Oil Burner is an easily controlled pressure type coil burner designed by Littleford engineers and made in the Littleford shops by skilled workmen.

A single valve control adjusts the burner to any desired degree between a simmering flame or a roaring blaze. The temperature of the heat produced is from 1800° to 2100° Fahrenheit, depending on the size of the burner. Properly arranged wind shields keep all heat from the burner directed into the furnace shell regardless of weather conditions. If the burner is needed for pre-heating, thawing or drying it can be easily detached from the kettle. Kerosene, distillate, or light furnace oil should be used for fuel. The burner is so constructed that the coil can be removed and a new coil quickly installed.

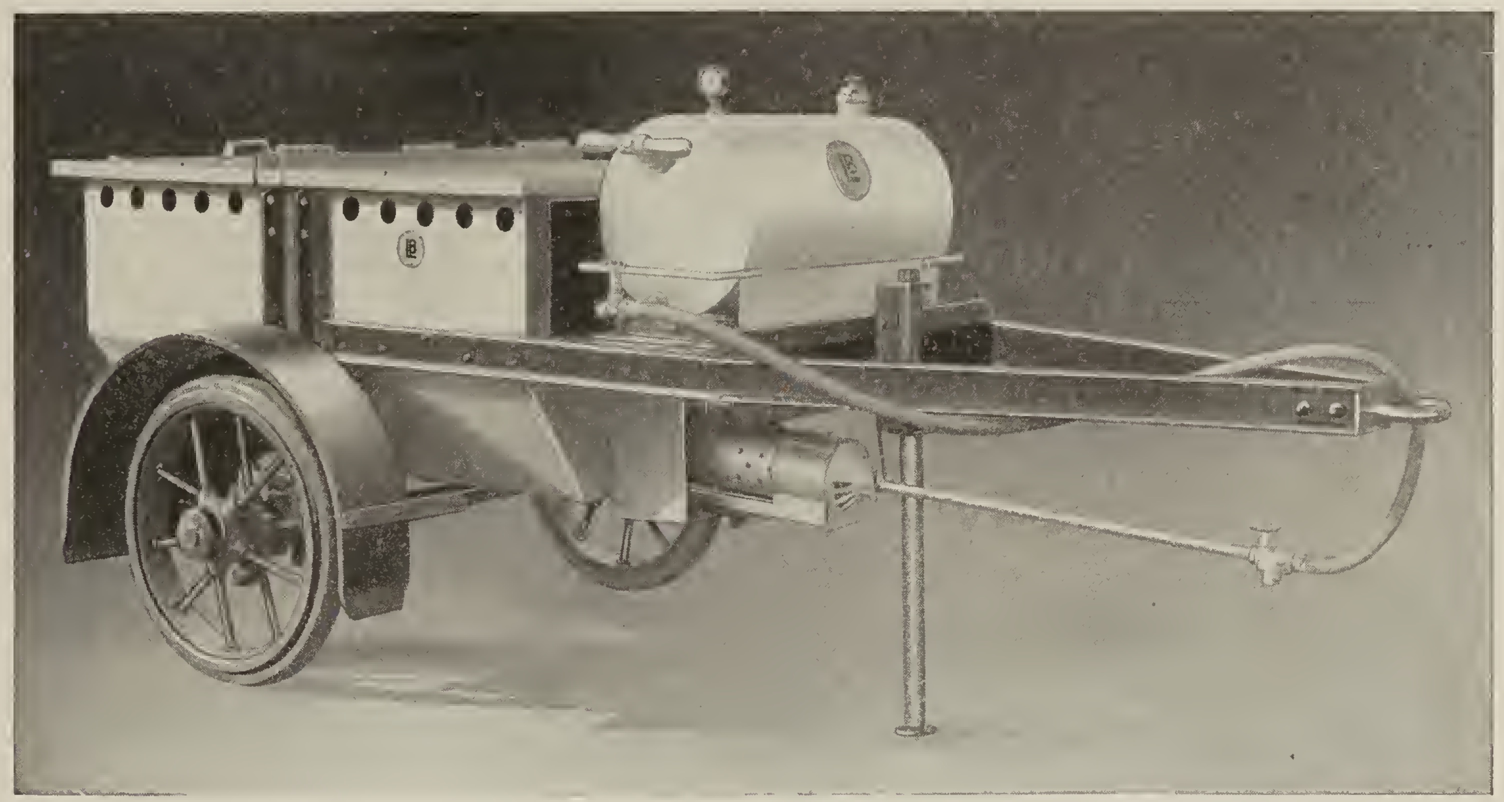
The twenty gallon fuel tank is made of double dipped galvanized iron and is equipped with an easily operated pressure pump. It is tested at 150 lbs. hydrostatic pressure—more than three times the operating pressure.

No. 84-W fitted with Littleford Barrel Hoist. It consists of a swinging davit, sockets to receive davit, half-ton differential chain block and barrel spreader.

Running Gear

The chassis is made of 3" x 4.1 lb. channels joined at the front by a non-breakable cast steel pulling eye; this chassis, strongly reinforced at points where subjected to most severe strain, is cushioned on heavy helical springs that absorb road shock.

No. 84-W has a 1½" high carbon steel axle, hubs with heavy duty roller bearings, large grease reservoirs; 30" x 4" x ½" steel tired wheels are standard equipment; 32" x 3" solid rubber tired wheels and protecting heat guards at a small extra charge. See complete specifications on page 4.



The No. 84-WS Burning Kettle. Steel tied wheels are standard equipment. Rubber tired wheels and heat guards, as shown above, at slight additional cost.

The New 75 Gallon No. 84-WS KETTLE

The No. 84-WS is a low-priced oil burning tar and asphalt kettle built throughout with typical Littleford thoroughness.

For maintenance work requiring an outfit of 50 or 75 gallons, it is a kettle that cannot be equalled. We offer to highway departments and contractors, through combined production on 50 and 75 gallon kettles, a 75 gallon oil burning kettle at a price you must pay for any first class wood burning kettle.

No. 84-WS Kettle and chassis is built as a single unit—it has no separate running gear. The same kettle construction prevails throughout the No. 84-WS as is found in the larger No. 84-W—completely enclosed melting tank, splash plates, double-hinged cover, "No Drip" non-breakable draw-off cock, Littleford Torch-Type Oil Burner, etc.

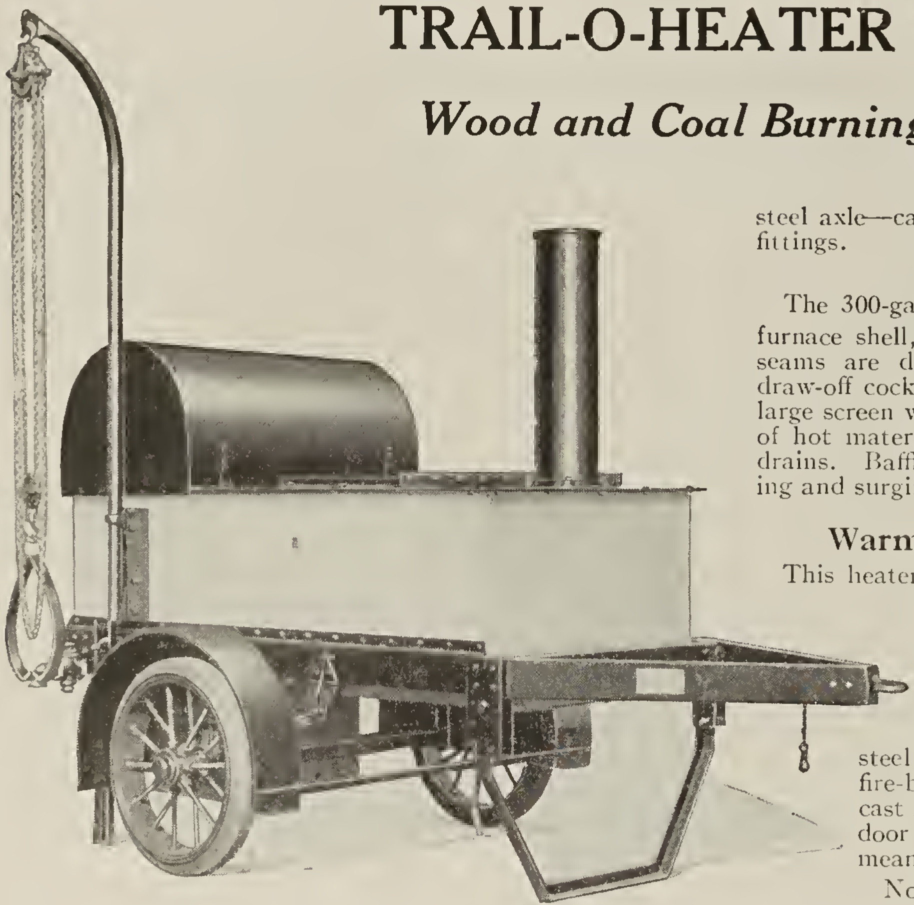
No. 84-WS, in spite of its comparatively low price, is a quality job through and through. If you need a small capacity maintenance kettle, by all means, give No. 84-WS careful consideration.

SPECIFICATIONS

Portable Kettles	No. 84-WS	No. 84-W	
		5	6
Capacity, Gallons	50 to 75	110	165
Kettle, Length	48"	48"	54"
Kettle, Width	30"	36"	36"
Kettle, Depth	16½"	20½"	24½"
Loading Height above Ground	41"	46"	50"
Over-all Size	55½" x 115"	63¾" x 115"	63¾" x 121"
Gauge of Material—Melting Tank	10 Firebox	10 Firebox	10 Firebox
Gauge of Material—Furnace Shell	12	12	12
Fuel Tank Capacity—Gallons	20	20	20
Fuel Consumption—Gallons Per Hour	2	2½	2½
Springs	Helical	Helical	Helical
Axle, High Carbon Steel	1½" diameter	1½" diameter	1½" diameter
Wheels—Rubber Tired	24" x 3"	32" x 3"	32" x 3"
Wheels—Steel Tired	26" x 4"	30" x 4"	30" x 4"
Bearings—Roller	Heavy Duty	Heavy Duty	Heavy Duty
Drop Leg—Double Extra Heavy Pipe	1¼" diameter	1¼" diameter	1¼" diameter
Shipping Weight, Lbs., (Rubber Tired Outfit)	910	1090	1160
Shipping Weight, Lbs. (Steel Tired Outfit)	820	970	1040
Code Word—(Rubber Tired)	RUOBSEW	RUOBO	RUOBRY
Code Word—(Steel Tired)	OBSEW	OBO	OBRY

TRAIL-O-HEATER No. 78

Wood and Coal Burning Type



NO. 78, Wood and Coal Burning mate to No. 78-OB, has all of the trailing qualities found in the oil burning Trail-O-Heater. Chassis is low-slung and cushioned on 44-inch semi-elliptical springs—wheels 32"x5" rubber tired, equipped with Timken roller bearings—high carbon steel axle—cast steel unbreakable pulling eye and cast steel fittings.

Melting Tank

The 300-gallon melting tank, enclosed entirely within the furnace shell, is made of special analysis fire-box steel—all seams are double welded and leak-proof. The two-inch draw-off cocks, one located on each side, are protected by a large screen which prevents clogging and permits drawing off of hot material as it melts—solid material cannot clog the drains. Baffle plates within the melting tank prevent splashing and surging of melted material as outfit is trailed.

Warming Hood and Furnace Shell

This heater has the same warming hood and barrel grid arrangements as No. 78-OB. The warming hood is securely hinged at the back—opening under it is fitted with the removable barrel grid—it won't take long to drain a barrel under the warming hood.

The furnace shell is made of heavy reinforced steel plate. Cast iron and steel liners protect the fire-box from cracking and buckling. Removable cast iron grate bars, non-warping pressed steel fire-door and special draft control door are features that mean long life under hard and steady service.

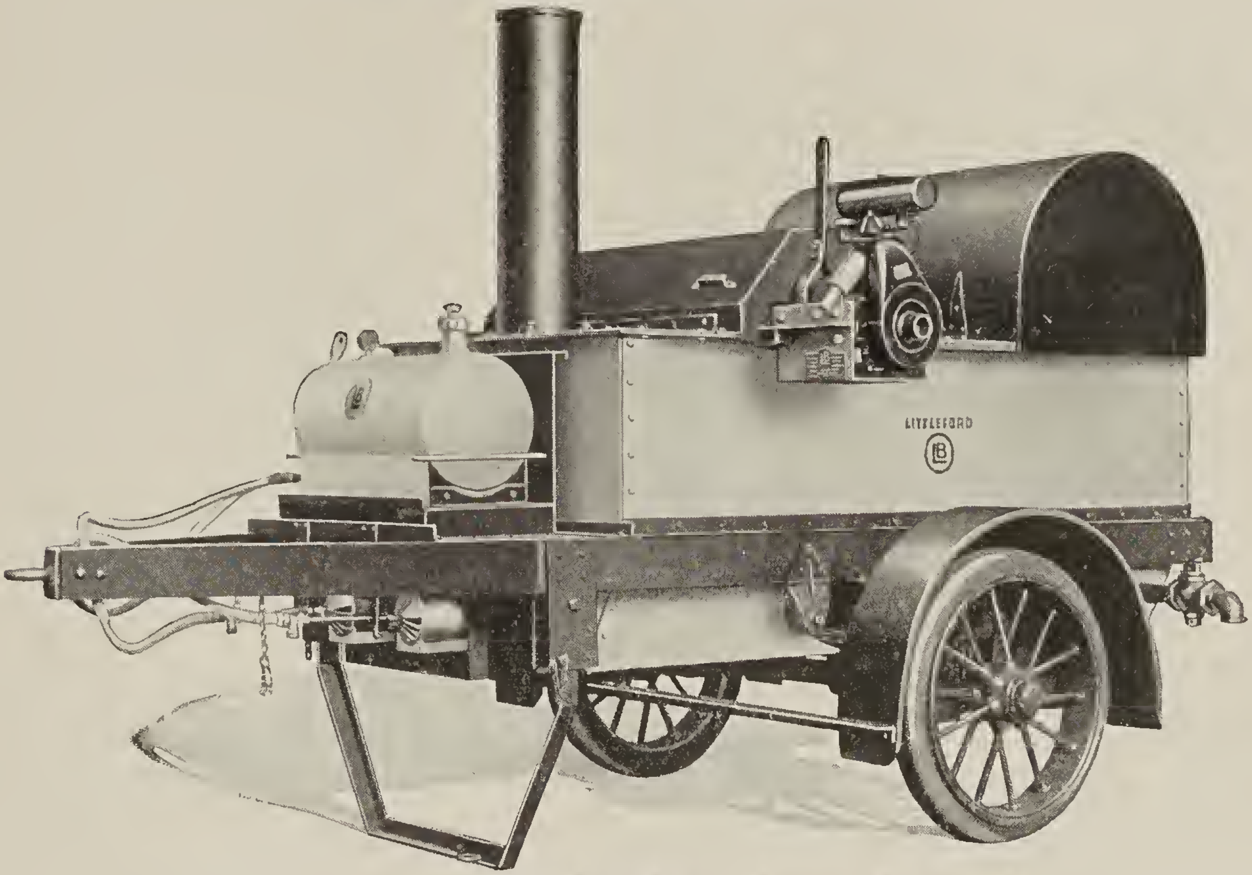
No. 78 is shown above equipped with the Littleford Barrel Hoist. This accessory consists of swinging davit of 2-inch extra heavy reinforced pipe, sockets to receive davit, half-ton differential chain block and barrel spreader. It can be fitted to kettles of any make. Shipping weight, hoist complete—95 lbs. Code word, complete-Hoist. It once and for all eliminates the back breaking part of loading.

SPECIFICATIONS

No. 78-OB—Oil Burning Kettle	
Capacity, Gallons	300
Kettle, Length	84"
Kettle, Width	42"
Kettle, Depth	25"
Material—Melting Tank	¼" Fire-Box
Material—Furnace Shell	3/16"
Draw-off Cocks (Two), Diameter	2"
Fuel Tank, Capacity, Gallons	20
Burners (Two)	No. 4 Torch
Chassis, Channels	5"
Pulling Eye	Cast Steel
Semi-Elliptical Spring, 10 Leaves	2½" x 44"
Lubrication	Alemite
Rubber Tires	32" x 5"
Roller Bearings	Timken
Axle, High Carbon Steel	2¼" Square
Overall Size—Length	147"
Overall Size—Width	75"
Loading Height	56"
*Weight, Heater only	2350 lbs.
Weight, including Running Gear	3470 lbs.
*Code Word, Heater only	TRAILOL
Code Word, complete	TRAILOLMO

No. 78—Wood and Coal Burning Kettle	
Capacity, Gallons	300
Kettle, Length	84"
Kettle, Width	42"
Kettle, Depth	25"
Material—Melting Tank	¼" Fire-Box
Material—Furnace Shell	3/16"
Size of Fire-Box	29" x 2 "
Draw-off Cocks (Two), Diameter	2"
Chassis, Channels	5"
Pulling Eye	Cast Steel
Semi-Elliptical Spring, 10 Leaves	2½" x 44"
Lubrication	Alemite
Rubber Tires	32" x 5"
Roller Bearings	Timken
Axle, High Carbon Steel	2¼" Square
Overall Size—Length	147"
Overall Size—Width	75"
Loading Height	57"
*Weight, Heater only	2350 lbs.
Weight, including Running Gear	3470 lbs.
*Code Word, Heater only	TRAIL
Code Word, complete	TRAILMOUNT

*The No. 78-OB and No. 78 melting kettles can be mounted on the U. S. Government Army Trailer. If you have one for this purpose order heater only.



TRAIL-O-HEATER No. 78-OB

NO. 78-OB, the Oil Burning Trail-O-Heater, is everything you want in a modern road maintenance outfit . . . large capacity (300 gallon tank)—remarkable heating ability (a batch of asphalt in 60 to 90 minutes, depending on melting point)—low slung chassis cushioned on semi-elliptical springs—rubber tired wheels with Timken roller bearings . . . trail it at high speed, it's made for that!

The 78-OB melting tank, entirely enclosed by the furnace shell, is made of fire-box steel—it can stand intense heat and will not burn out. All seams are double lap welded and absolutely leak-proof. Inside this 300 gallon tank is a surge plate and around the top are splash plates that entirely eliminate surging and splashing of melted material.

Two large draw-off cocks are placed one on each side at the rear of the kettle. On the inside of the melting tank, protecting each of the draw-off outlets from solid material, is a large screen. You can add cold material constantly and in any quantities—draw-off cocks can't clog.

Then there is the warming hood and the barrel grid. Throw the hood back—place a barrel on the grid—close the hood and it won't take long for that barrel to drain. The barrel grid is removable and can be easily lifted out.

The Special Combustion Box

The Special Littleford Combustion Box directs the heat from the two large LB torch-type oil burners to the far end of the kettle—the heat then circulates back to the vent stack, traveling full length of the kettle twice giving double circulation.

Intense heat (perfectly controlled)—large heating area—thorough circulation—and one result, *a large capacity kettle that is the fastest and most economical heater on the market today* . . . 300 gallons of asphalt in from 60 to 90 minutes—that is easy!

This Combustion Box is made of fire-box steel and is strongly reinforced at top and bottom by angle stiffeners—it cannot warp or break. The bottom is lined with 1-inch Sil-O-Cel block insulation—heat is held within the furnace and efficiency of kettle is raised.

Two Littleford Torch-Type Oil Burners comprise the heating unit on No. 78-OB. Each is regulated by a single valve and can be adjusted to produce either a simmering flame or a roaring blaze. The twenty-gallon fuel tank is made of double dipped galvanized iron and is equipped with an easily operated pressure pump. Tank is tested at 150 lbs. hydrostatic pressure—more than three times the operating pressure.

Running Gear

The Trail-O-Heater chassis is made of five-inch channels with 5-inch cross headers at front and rear. It is mounted on 10-leaf 44-inch semi-elliptical springs and has a carrying capacity of two tons. 32″ x 5″ rubber tired wheels, Timken roller bearings, high carbon steel axle, and cast steel fittings—spring hangers, shackles, etc.—all add to the strength and trailing quality of this sturdy outfit. Large heat guards thoroughly protect the rubber tires from the heat of the kettle. See complete specifications on page 8.

The Motor-Driven Spray

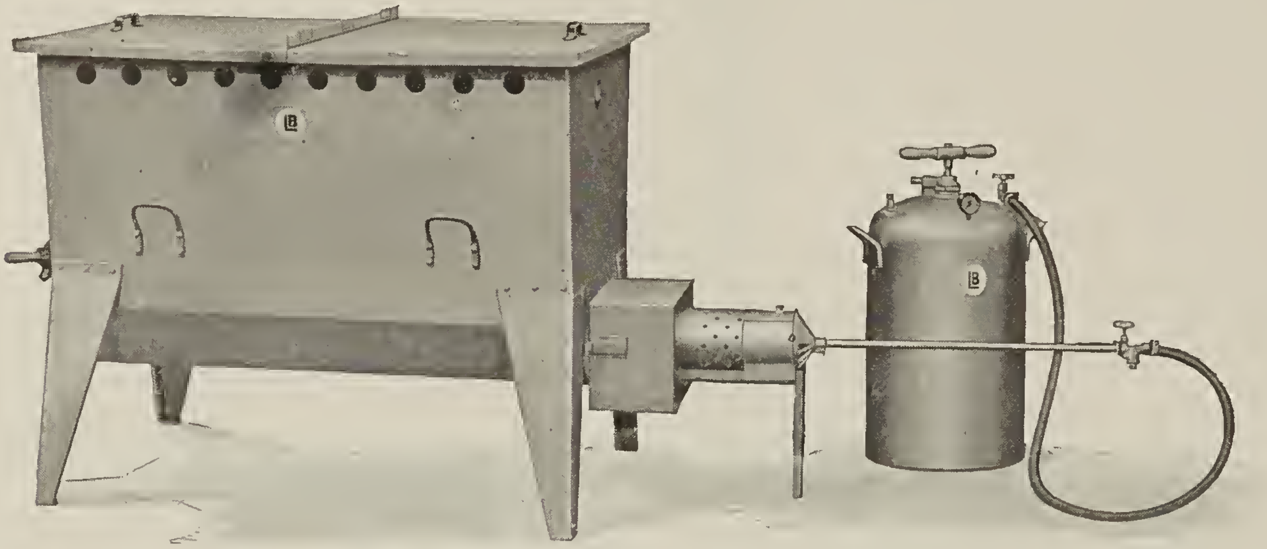
Driveway surfacing, small resurfacing jobs, penetration and skin patching with the LB Motor-Driven Spray Attachment is something new for highway contractors. Operation cost of the motor amounts to only a few cents a day—operating crew is reduced to one man and the area covered increased three or four times.

The outfit consists of an air-cooled engine with twin disc clutch, rotary gear pump, intake pipe with filter screen, fifteen foot highly insulated flexible metal hose and spray bar with regulating valve and removable swirling circular spray tip.

The operator can stop the spray by closing the valve on the spray bar. Motor is equipped with pop-off valve which, when valve on spray bar is shut, allows asphalt to flow back into tank. The motor can be disconnected by releasing the clutch. This is done only when the spraying operation is to stop for a few minutes. Intermittent stops to change positions are controlled entirely by spray bar valve.

Eliminate pouring pots and buckets on your driveway surfacing and resurfacing work—your crew can do six to eight times as much work with the LB Motor-Driven Spray. Asphalt kettles of any make can be equipped with this outfit. Write for full particulars.

LITTLEFORD BROS., Cincinnati, Ohio LB

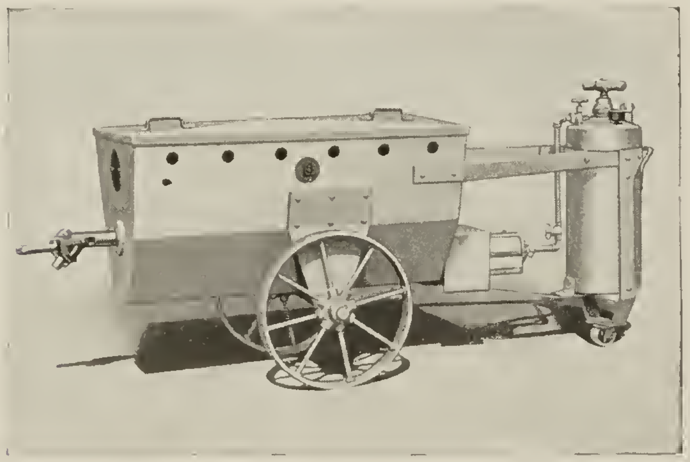


No. 84 STATIONARY KETTLE

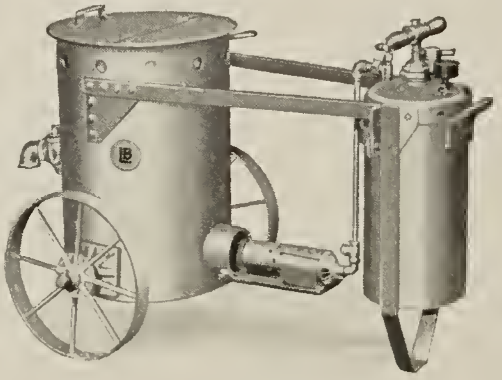
Oil Burning Stationary Kettle No. 84 has the same construction as No. 84-W except that it has no running gear; it is mounted on four sturdy legs. (At slight additional cost the legs may be equipped with ball-bearing swivel casters.) The Kettle has a double-hinged cover, completely enclosed melting tank with large heating area, strainer, "No Drip" draw-off cock, galvanized fuel tank, Littleford Torch-Type Oil Burner, etc. It ranges in size from 10 to 165 gallons—see specifications below.

SPECIFICATIONS

Stationary Kettle No. 84	1	2	3	4	5	6
Capacity, Gallons	10	25	50	75	110	165
Kettle, Length	27″	36″	42″	48″	48″	54″
Kettle, Width	12″	18″	22″	30″	36″	36″
Kettle, Depth	10″	13″	20″	16½″	20½″	24½″
Loading Height above Ground	25″	26″	34″	33″	37″	41″
Gauge of Material, Kettle	12	12	10	10	10	10
Gauge of Material, Shell	14	14	12	12	12	12
Fuel Tank Capacity, Gallons	5	5	10	15	20	20
Shipping Weight, Lbs.	135	190	370	450	515	635
Code Word	SAOB	SOIL	SOB	STAB	STEER	SLUR

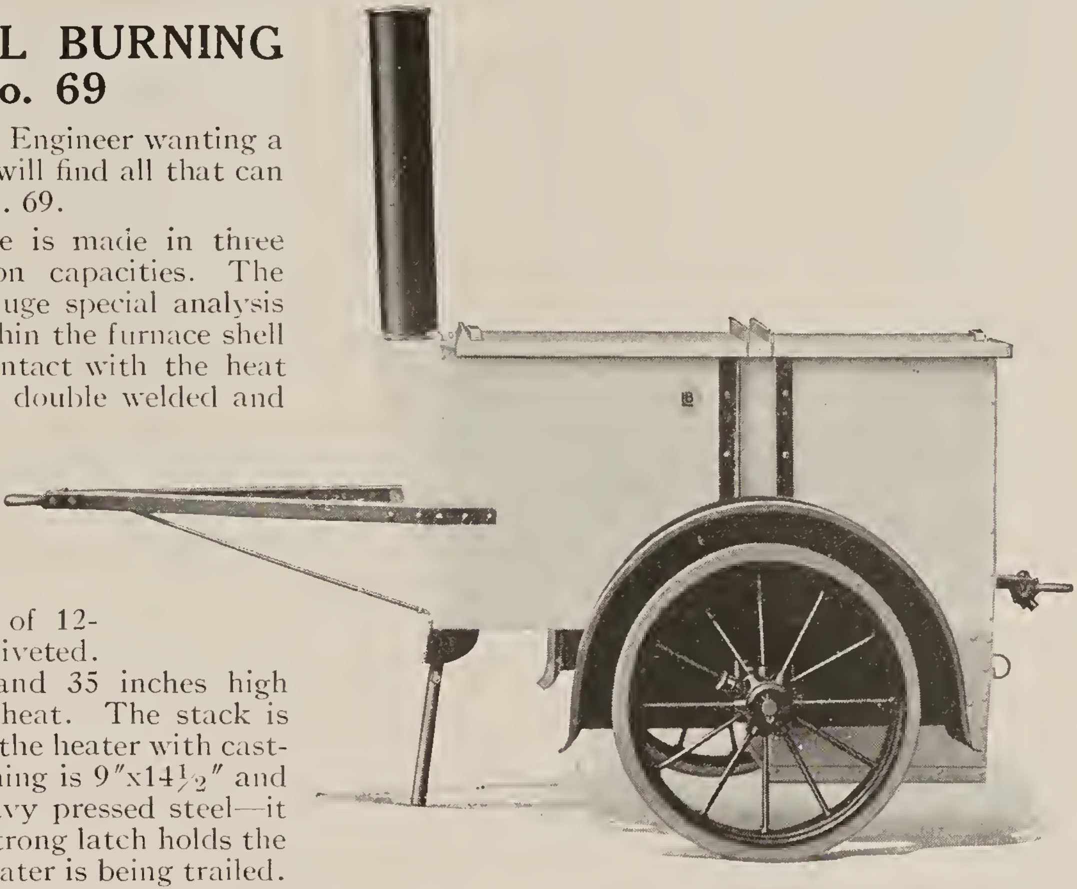


No. 84-WM is the latest Littleford Oil Burning Patrol Heater, capacity—25 gallons. Embodied in it are quite a number of features heretofore found only in larger kettles: Splash plates, removable strainer, non-breakable "No Drip" draw-off cock, LB Torch-Type Burner, windshields, etc.



No. 68-OB, the 10 gallon oil-burning patrol heater is ideal for expansion joint filling and small patch work. The five gallon galvanized fuel tank supplies more than enough fuel for an eight hour day.

WOOD AND COAL BURNING KETTLE No. 69



The Contractor or Highway Engineer wanting a wood and coal burning kettle will find all that can be desired in the Littleford No. 69.

This strong Portable Kettle is made in three sizes: 60, 110 and 165-gallon capacities. The melting kettle, made of 10-gauge special analysis fire-box steel, sets entirely within the furnace shell—all sides come into direct contact with the heat from the furnace. Seams are double welded and absolutely leak-proof. The draw-off cock is of the Littleford "No-Drip" type made of malleable iron—it can be locked when the kettle is not in use.

The furnace shell is made of 12-gauge steel, reinforced and riveted. A stack, 6½″ in diameter and 35 inches high assures proper circulation of heat. The stack is securely fastened to the top of the heater with cast-iron clips. The fire-door opening is 9″x14½″ and the door itself is made of heavy pressed steel—it will not buckle or break. A strong latch holds the door firmly closed when the heater is being trailed. The fire-box, equipped with cast-iron grate bars, is protected from the heat by heavy liner plates. Under the cast-iron grate bars is an ash pan which keeps ashes and sparks from falling under the heater.

30″ steel wheels with 4″x½″ steel tires are standard equipment, however, rubber tired wheels add greatly to the life and trailing qualities of the outfit. The rubber tires are protected by heat guards.

A cast steel pulling eye, at the front end of kettle, affords a safe, unbreakable connection for trailing.

A non-collapsible drop leg made of 1¼″ pipe is a firm and positive support for the heater.

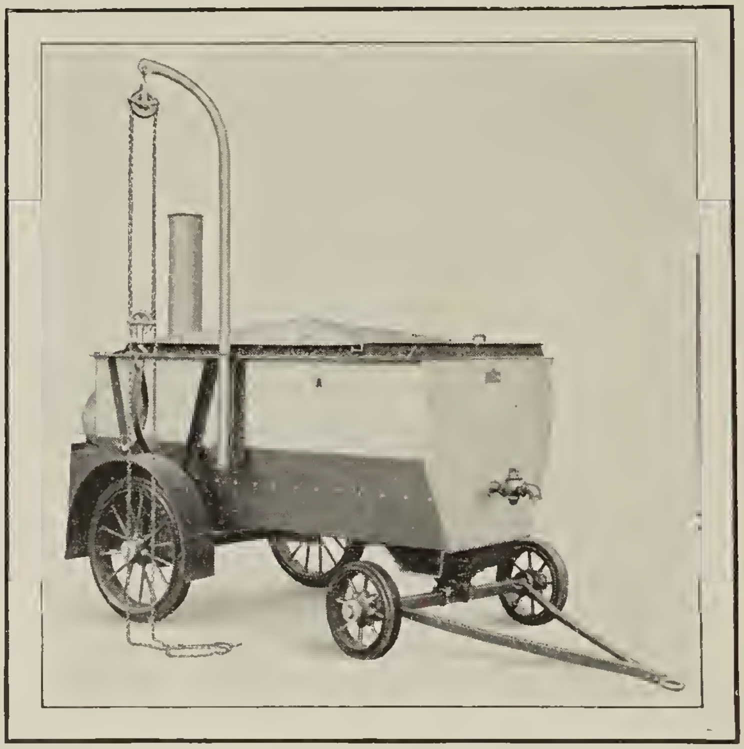
The cover is made unusually strong so that barrels can be rolled onto it. Front section is hinged—opening under it has removable barrel grid; rear section is reinforced by two angle stiffeners to support barrels. Baffle plates are so arranged that hot-stuff cannot splash out while kettle is being trailed.

There are also two small wood burning patrol heaters. No 68—capacity, 10 gallons; No. 69-M—capacity, 25 gallons. Complete specifications are given below.

SPECIFICATIONS

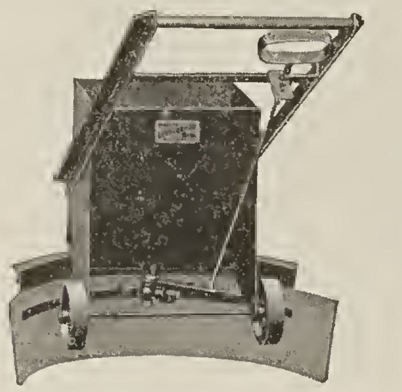
Size	No. 68	No. 69M	No. 69		
			1	2	3
Capacity, Gallons	10	25	60	110	165
Kettle, Length	......	24″	45″	45″	54″
Kettle, Width	16¼″ di.	18″	30″	30″	30″
Kettle, Depth	13¾″	14″	16¼″	22⅛″	26¾″
Loading Height above Ground	28″	34″	38″	44″	48¾″
Over-all Size	......	......	56 x 105¾	56 x 105¾	56 x 113½
Fire Door, Pressed Steel, Non-Warping	......	......	9″ x 14½″	9″ x 14½″	9″ x 14½″
Gauge of Material:					
Melting Tank	10	12	10	10	10
Furnace Shell	10	14	12	12	12
Springs	......	......	Helical	Helical	Helical
Axle, Diameter	......	......	1½″	1½″	1½″
Wheels:					
Rubber Tired	......	......	32″ x 3″	32″ x 3″	32″ x 3″
Steel Tired	15½″ x 2″	18″ x 2″	30″ x 4″	30″ x 4″	30″ x 4″
Bearings	Plain	Plain	Roller	Roller	Roller
Shipping Weight, Lbs. (Rubber Tires)	......	......	920	1020	1200
Shipping Weight, Lbs. (Steel Tires)	140	285	800	900	1080
Code Word (Rubber Tires)	......	......	RUMAN	RUBAR	RUCAM
Code Word (Steel Tires)	PACO	MITE	MAN	BAR	CAM

ASPHALT KETTLE NO. 83



No. 83 Oil Burning Asphalt Kettle is made in 300 and 550 gallon sizes. The wood burning mate to No. 83 is No. 48 made in sizes from 300 to 1500 gallons. (See specifications below). Steel tired wheels are standard equipment for No. 83. Rubber tired wheels and heat guards are slightly more. The LB Barrel Hoist is also extra equipment but well worth the additional cost.

Although a large capacity kettle, No. 83 is capable of producing melted asphalt in a surprisingly short space of time. This is due to the *Special Littleford Insulated Combustion Box*. The heat from two large LB Torch-Type oil burners is forced to the far end of the kettle, then circulates between the furnace shell and the melting tank back to the vent stack—the heat travels full length of kettle twice before passing out through vent stack. The bottom of the combustion box is insulated and retains the heat, further increasing the efficiency of the double circulation. You have *intense heat* (perfectly controlled), large heating area, thorough circulation and one result—*a large capacity kettle capable of supplying large volume output of melted asphalt in quickest possible time.*



The LB Squeegee Machine for the application of filler to brick, granite and wood block surfaces, squeegee coat on asphaltic concrete.

In addition No. 83 melting tank is made of special analysis firebox steel, all seams are double lap welded and absolutely leak proof. Tank is fitted with surge plate and splash plates. Large removable screen over draw-off cock prevents clogging.

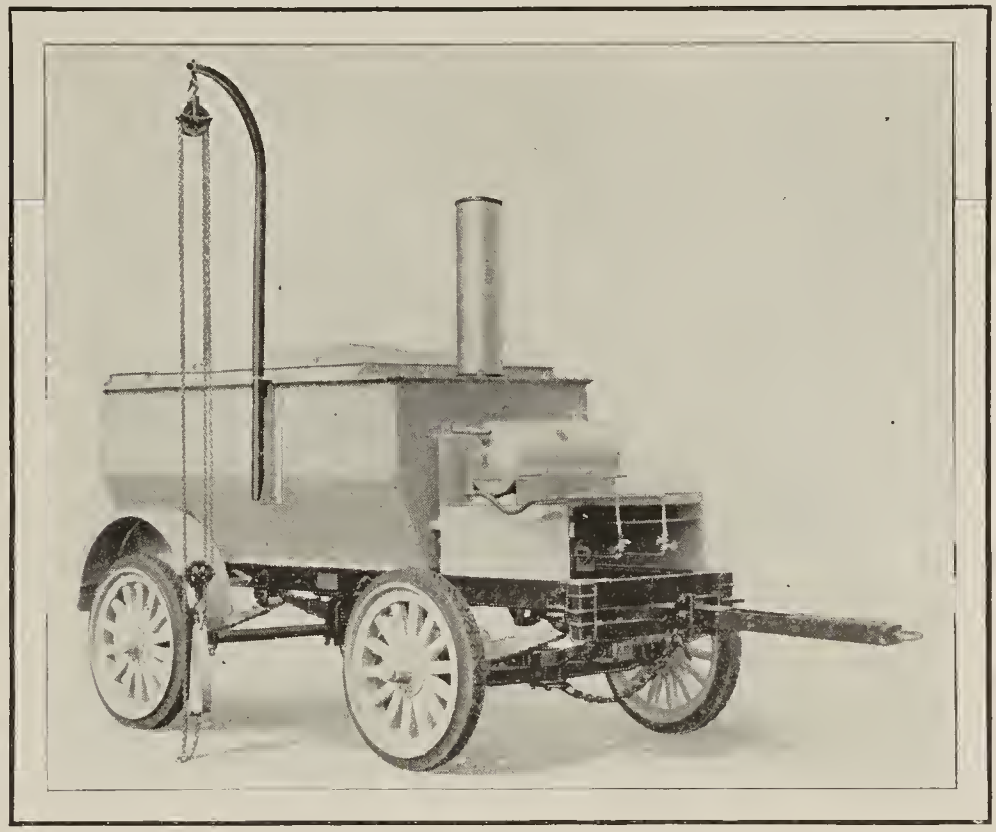
No. 83 and No. 48 can be fitted with a large warming hood made in two sections each capable of holding two barrels of material. A supporting barrel grid is furnished with the hood.

We suggest fitting kettles with LB asphalt thermometers having a range of from 75 to 525°F. They are suitable for kettles of any size or make. Code word—Thermo.

SPECIFICATIONS Nos. 83 and 48

Size No.	2	3	20	25	30
Capacity, in Gallons	300	550	1000	1250	1500
Kettle, Length	72″	96″	128″	128″	128″
Kettle, Width	45″	48″	66″	66″	66″
Kettle, Depth	27″	32½″	37″	48″	54″
Loading Height above Ground	56″	62″	73″	84″	90″
Draw-off Cock, Diameter	2″	2″	2″	3″	3″
All Steel Wheels:					
Front Wheels, Diameter	18″	20″	22″	22″	22″
Front Wheels, Tires	3½″ x ½″	4″ x ½″	8″ x ⅝″	8″ x ⅝″	8″ x ⅝″
Rear Wheels, Diameter	30″	34″	30″	30″	30″
Rear Wheels, Tires	4″ x ½″	5″ x ⅝″	8″ x⅝″	8″ x ⅝″	8″ x ⅝″
Rubber Tired Wheels:					
Front Wheels, Tires	20″ x 3½″	20″ x 4″	......	......	......
Rear Wheels, Tires	32″ x 4″	34″ x 5″	......	......	....
Capacity of Fuel Tank, in Gallons (No. 83—Oil Burning Kettle)	20	20	......	......	......
Fuel Consumption, gallons per hour (No. 83—Oil Burning Kettle)	4	5	......	......	......
Shipping Weight, Lbs.:					
No. 48—Steel Tired	2600	3800	7300	7500	7700
No. 83—Steel Tired	2800	3870	......	......	......
Code Words:					
No. 48—Steel Tired	ARCON	BEACON	CONCUR	CONDEX	CONDOR
No. 83—Steel Tired	OBESE	OBLATE	......	......	......
Shipping Weight, Lbs.:					
No. 48—Rubber Tired Equipment	2860	4160	......	......	......
No. 83—Rubber Tired Equipment	3060	4230	......	......	......
Code Words:					
No. 48—Rubber Tired Equipment	RUARCON	RUBEACON	......	......	......
No. 83—Rubber Tired Equipment	RUOBESE	RUOBLATE	......	......	......
Warming Hood, Shipping Weight, Lbs.	280	280	......	......	......
Code Word (Warming Hood)	HOD	HOD	......	......	......

The HEAVY-DUTY TRAIL-O-HEATER

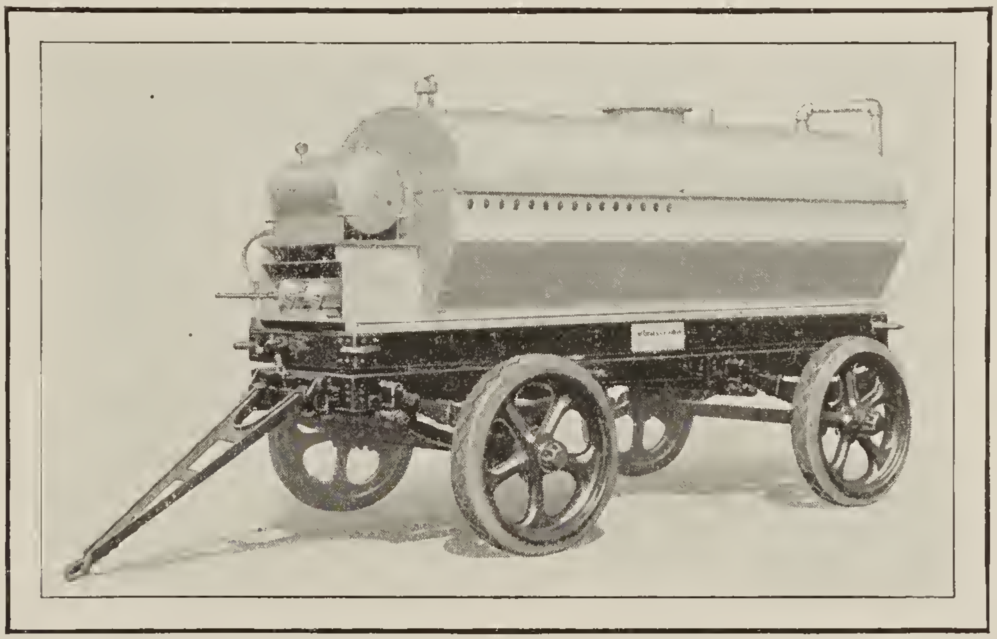


No. 81, the Heavy Duty Four Wheel Trail-O-Heater, has a standard capacity of 550 gallons. We are, however, prepared to manufacture it in sizes from 550 to 1000 gallons. This large Trail-O-Heater can be used to great advantage on maintenance work requiring large quantities of tar or asphalt, or for the transportation of material from central plant to pressure distributors—it is built for high speed trailing.

The two large Littleford Torch-Type Oil Burners are completely protected from wind and down draft—keep them going full blast as you trail the heater to the job—they will melt material on the way!

The Special Littleford Combustion Box directs heat from burners to far end of kettle—heat then circulates back to vent stack, traveling full length of kettle twice. The Combustion Box, made of fire-box steel, is strongly reinforced at top and bottom by angle stiffeners—it cannot warp or break. Bottom, lined with one-inch thick Sil-O-Cel insulation, retains heat within the kettle—no heat wasted—rapid melting—quick draw-off. Shipping weight, 5675 lbs. Code Word, Trailob.

DISTRIBUTOR SUPPLY TANK
No. 97



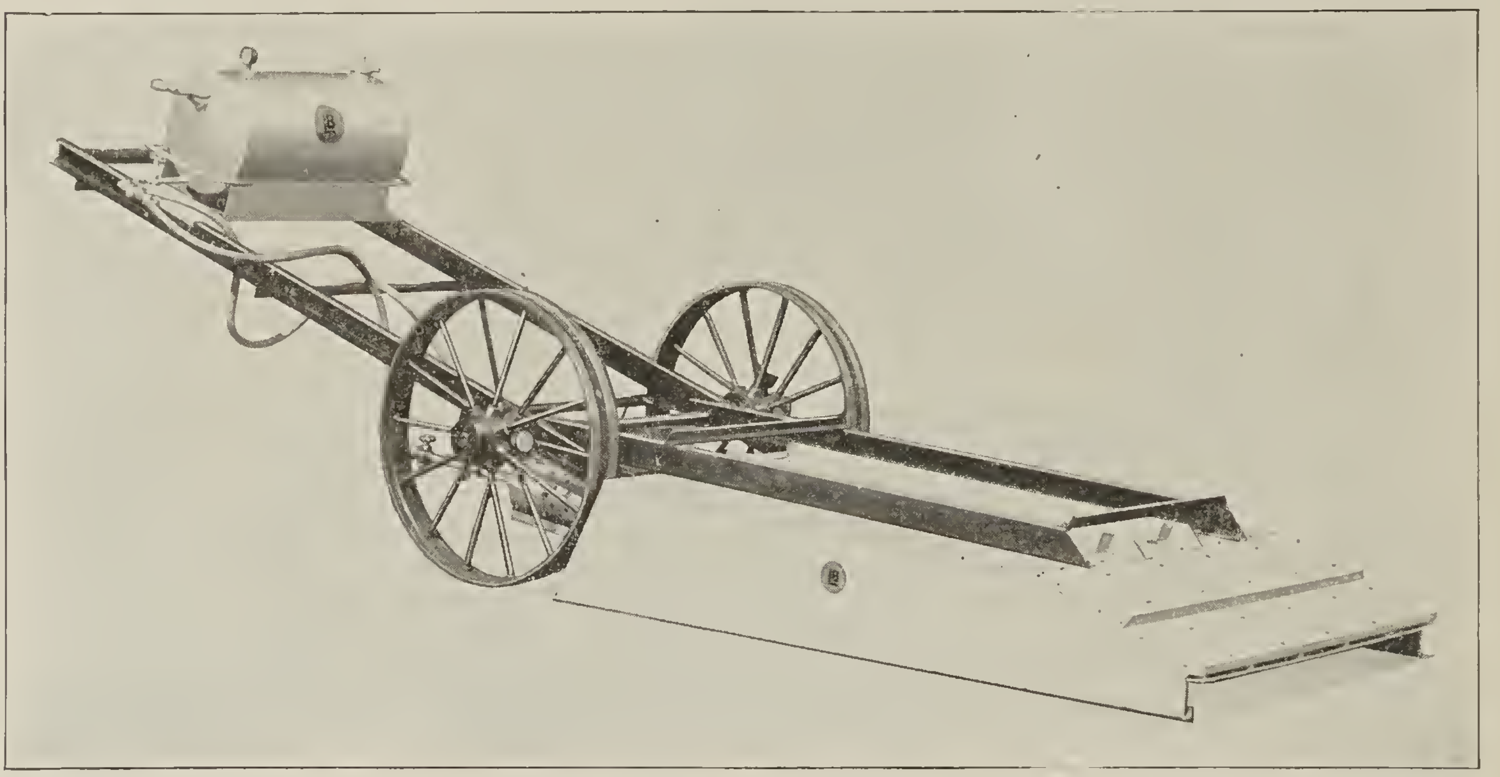
Supply Tank designed to take melted tar or asphalt direct from tank car to pressure distributor. It is equipped with large fuel tank and two Littleford Torch-Type Oil Burners that will keep material melted en route.

Standard sizes—600, 800 and 1000 gallons. We can, however, furnish this outfit ranging in any size you might require. Welded construction throughout.

The Supply Tank has the same special Combustion Box construction as the No. 78-OB and No. 81 Kettles. Heat is not only circulated around the melting tank twice—it is retained by the Sil-O-Cel lined bottom.

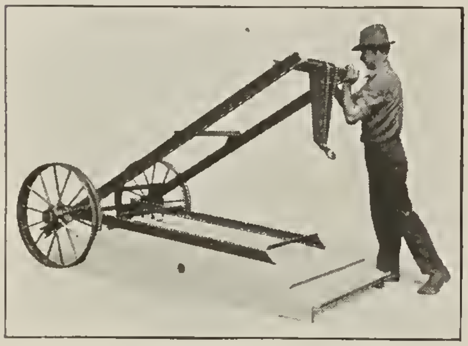
The tank is mounted on a heavy duty truck chassis equipped with semi-elliptical springs and rubber tired roller bearing wheels—it can be safely trailed at high rate of speed. Chassis can be equipped with either knuckle steer or roller bearing circle steer fifth wheel. Supply tank can be furnished without trailer if you desire.

No. 97 can be fitted with the LB Motor-Driven Spray Attachment which will pump material from tank car to supply tank and then transfer material to distributor tank. Fully described on page 7. Net weight, chassis only, 2800 lbs. Code Word, chassis only. Trailer. Code Word, complete, Tanktra.



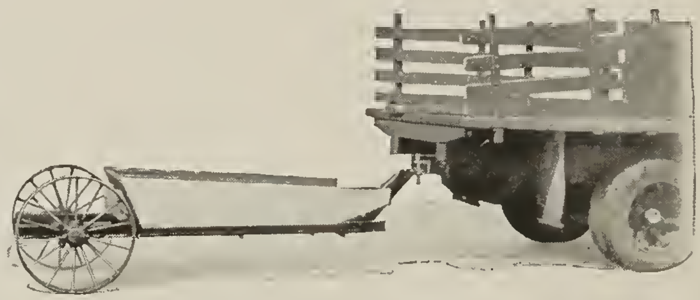
SURFACE HEATER No. 98

Littleford Surface Heater No. 98 is used to dry out concrete before putting down asphalt, to soften asphalt paving preparatory to patching, to heat brick surface before pouring filler, etc. When the top of an asphalt surface has been thoroughly heated, it can be easily raked and the new surface applied. This method of patching is faster and more economical than hand cutting.



The Littleford Surface Heater is fitted with two Torch-Type Oil Burners, and a 20 gallon galvanized fuel tank. The fuel tank can be adjusted on the handle to properly balance the weight of the heating pan so that the outfit can be moved along by one man.

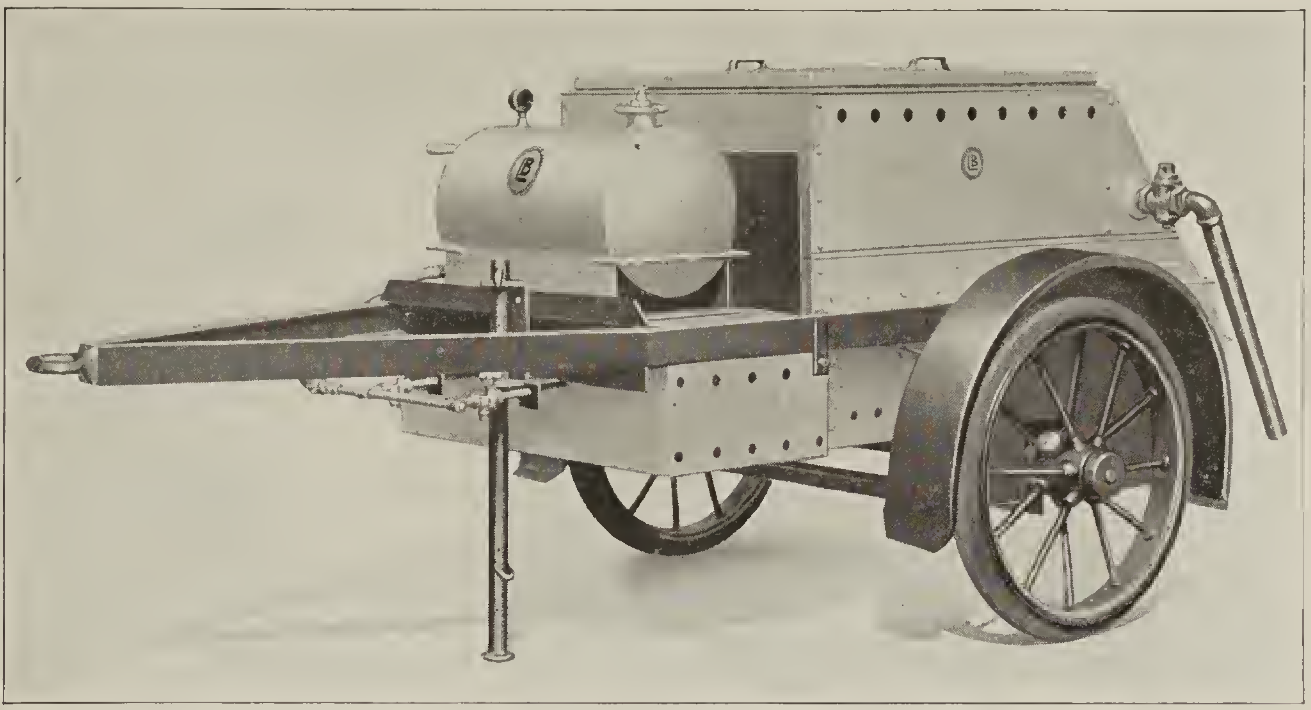
When you are ready to move the heater to another location remove the fuel tank, turn heating pan over so that it rests on handle—attach coupling to your truck as shown in the illustration and you're ready to go.



Notice that the handle folds down over the heating pan—the outfit can be folded up when stored or placed in a truck.

SPECIFICATIONS

Size	1	2
Length of Heating Pan	5′	6′
Width of Heating Pan	3′	4′
Overall Length, Handle in Position	12′	13′ 6″
Length, Handle Folded Over	7′ 2″	8′ 2″
Overall Width	3′	4′
Gauge of Material (Pan)	10	10
Axle, Diameter	1½″	1½″
Wheels, Roller Bearings, Diameter	30″	30″
Frame, Channels	3″	3″
Fuel Tank, Capacity, Gallons	20	20
Oil Burner (2) Torch-Type, Size	No. 3	No. 4
Fuel Consumption, Gallons per Hour per Burner	1½	2
Code Word	SURFO	SURFT
Shipping Weight, Lbs	800	950



Steel tried wheels are standard equipment for No. 90. Rubber tired wheels and heat guards, shown above, cost slightly more. Notice complete wind shield protection of burners.

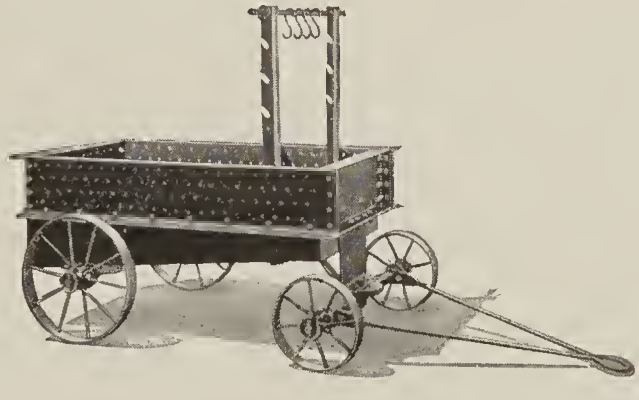
NUMBER 90 TOOL HEATER

(Patent Applied For)

No. 90 Tool Heater and Asphalt Cement Kettle, a practical combination outfit. The tool heating compartment holds from 15 to 20 paving tools and the two large Littleford Torch-Type Oil Burners will heat them thoroughly within five minutes. The 50 gallon Asphalt Cement Kettle over the tool heating compartment supplies material used for painting.

The Heating Compartment is reinforced and insulated. Side walls have steel liner plates: bottom is strengthened with heavy angle stiffeners and liner plates—tampers and smoothers can be dropped into the compartment without damaging the heater. Sil-O-Cel block insulation, one inch thick, retains the heat from the oil burners—heating efficiency is increased and fuel consumption is reduced.

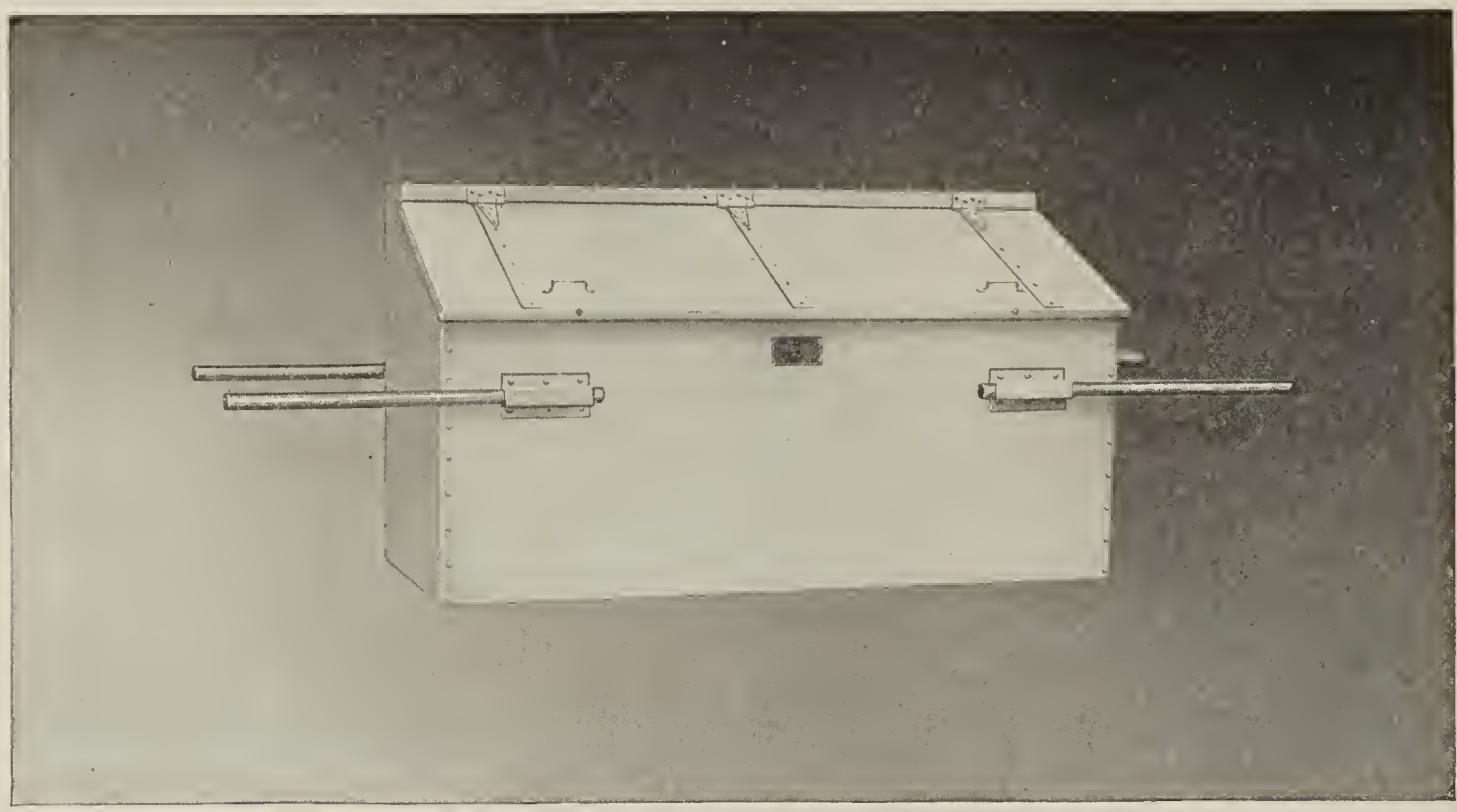
You want your tool heater to heat tools—that is far more important than melting a few gallons of asphalt. The intense heat from the LB burners will melt the A. C. in about ten minutes. Then the full volume of heat is not needed. The Littleford damper control between tool heating compartment and A. C. Kettle can be closed, shutting the heat from the kettle. Temperature of material can be perfectly controlled and you can have full volume of heat for your tools—you will not burn the A. C.



Littleford Tool Heater No. 9 is a strongly made wood or coal burning heater. It has removable cast iron grate bars, deep sloping ash pan, rack for asphalt pots and buckets. Inexpensive and serviceable.

No. 90 SPECIFICATIONS

Capacity of Asphalt Cement Kettle, Gallons	50
Width of Heating Compartment	33½″
Length of Heating Compartment	55″
Height above Ground where Tools enter	23″
Capacity of Fuel Tank, Gallons	20
Fuel Consumption per Hour (Each Burner), Gallons	1½
Diameter of Wheels (Steel Tires)	30″
Diameter of Wheels (Rubber Tires)	32″
Weight (with Steel Tires), Lbs	1325
Code Word (with Steel Tires)	TULOL
Weight (with Rubber Tires), Lbs	1445
Code Word (with Rubber Tires)	RUTULOL



All-Steel STATIONARY BOX

The Littleford All-Steel Stationary Storage Box is weather-proof, thief-proof, fire-proof and storage proof. You may wonder what we mean by storage-proof—this box has removable steel pipe handles. When it is time to store boxes, slip handles from sockets and place them in the box—they're out of the way! Stack boxes on end, side to side, or on top of each other—there are no handles to be smashed and much less room is required for storage.

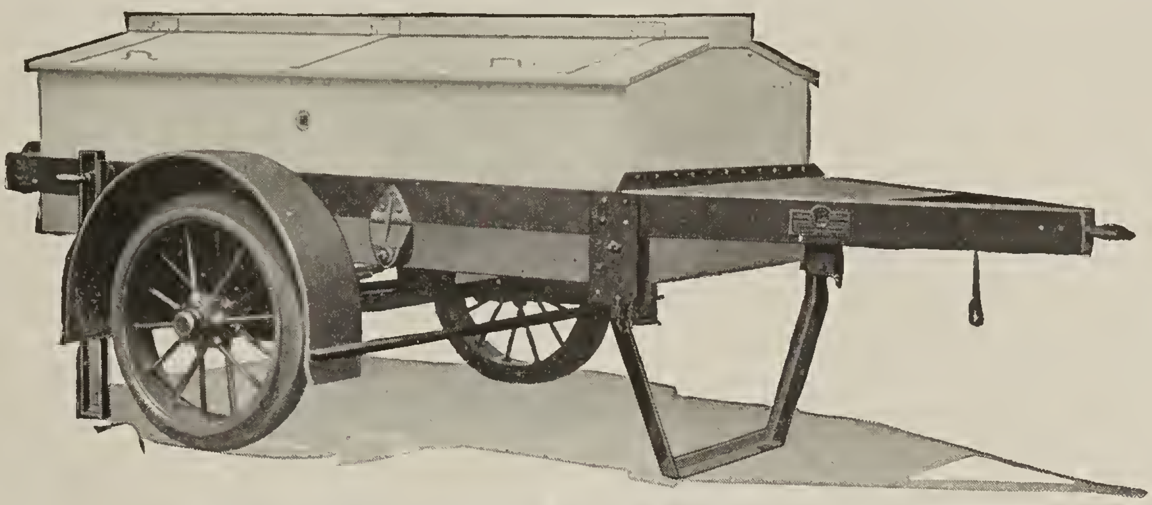
The main thing, of course, is safety for tools from weather, fire and theft—cover is flanged down and perfectly water-tight—all-steel construction eliminates danger of fire and theft—it is practically impossible to get into this box when it is locked.

A large shelf on the inside of the box is conveniently placed for small tools and equipment. When the large cover is raised a patent locking device holds it securely in place—it can't slip or fall until released.

The box is made in two sizes—see complete specifications below.

SPECIFICATIONS

	All-Steel Utility Box	All-Steel Heavy Duty Box	All-Steel Stationary Box	
			1	2
Tool Box:				
Length (Inside)	54″	84″	72″	84″
Width (Inside)	36″	40″	24″	30″
Height	Main Section 30½″ Upper Section 6″	24″ to 29″	21½″ to 30″	27″ to 34″
Gauge of Material	16	Box 12 Cover 14	14	14
Loading height above ground	35″	42″	21½″	27″
Shelves	Two Upper 54½″x18″x2″ Lower 54½″x12″x2″ Outside Bench 18″x40″ Utility Shelves 16″x51⅜″	Inside 84″x12″x2″ Outside 46″x10½″	10″x72″x2″	12″x84″x2″
Chassis:				
Material	3″ Channels	4″ Channels		
Length of Trailer (overall)	115″	138″		
Width (overall)	63¾″	63″		
Wheels—Rubber-tired	32″x3″	32″x4″		
Wheels—Roller-bearing	Heavy Duty	Timken		
Axle—High Carbon Steel	1½″ Diameter	1½″ Diameter		
Springs	Helical	31″x1½″ Semi-Elliptic		
Shipping Weight, Lbs.	900	1100	350	425
Code Word	SEBOX	BOX	SMABOX	LARBOX



All-Steel HEAVY DUTY BOX

This large portable Steel Tool Box is designed and constructed for highway maintenance departments, sewer, paving and bridge contractors, and public utilities. Jack hammers, drills, squeegees, smoothers, hoes, rakes, shovels, picks and all other equipment used in maintenance and construction work can be properly stored in the Littleford Heavy Duty All-Steel Tool Box. Protect your valuable tools in this all-steel tool box—it is insurance for them!

Heavy Duty Construction

Box is 7′ long, 40″ wide and 24″ to 29″ deep. It is made of 12 gauge steel and has a heavily reinforced bottom. The box is large and roomy but not too deep—tools and equipment can be properly arranged and easily found when wanted.

A strong 12″ x 2″ deep shelf extends full length of box and is placed 19″ from the bottom. Wrenches, hammers, saws and smaller equipment can be conveniently and safely stored on this shelf.

The double cover is water-proof—flanged on all edges—rigid and strongly hinged. When thrown open it is held firmly in place by a patented lock device which can be easily released, but cannot possibly let the cover fall until released.

Just in front of the tool box is a steel work bench 48″ x 24″. It is built between the 4″ channels that form the chassis and is very strong—vice or other bench tools can be mounted on it.

Ton-and-a-half Running Gear

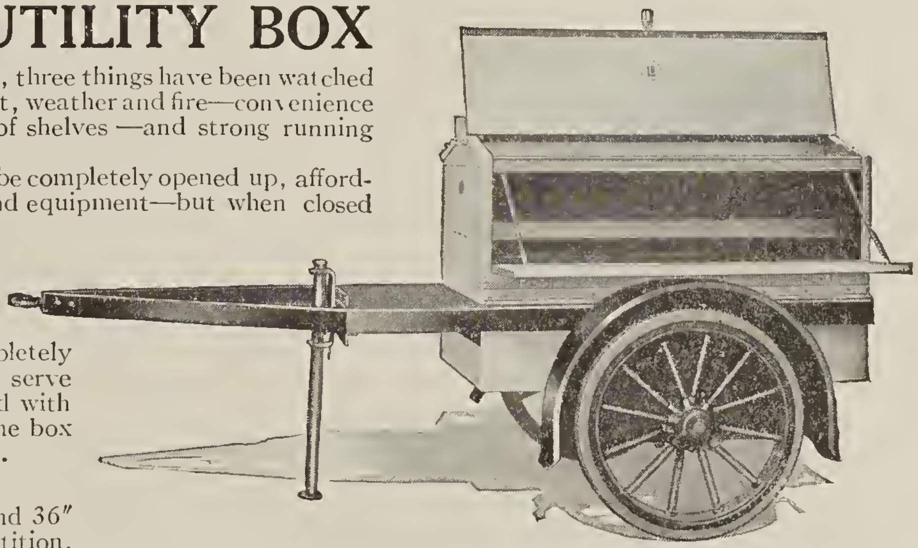
The chassis is made of 4″ channels strongly braced by 4″ cross headers and joined at the front end by an unbreakable cast steel pulling eye. It is mounted on 10 leaf 44″ semi-elliptical springs which absorb road shocks and permit rapid trailing. The 32″ x 4″ rubber tired wheels are equipped with Timken roller bearings. Shackle bolts have Alemite fittings.

Overall length of chassis from back to pulling eye, 11′ 6″. Overall width from hub to hub, 63″. Strong drop legs are placed at back and front—both are non-collapsible and when dropped in position will hold box firmly in place. Complete specifications for All-Steel Heavy Duty Tool Box given on page 19.

All-Steel UTILITY BOX

In designing the Littleford All-Steel Utility Tool Box, three things have been watched—safety, protection of tools and equipment against theft, weather and fire—convenience of storage space with proper and logical arrangement of shelves —and strong running gear built to stand rough, high-speed trailing.

A remarkable feature about this tool box is that it can be completely opened up, affording easy accessibility to small, medium and large tools and equipment—but when closed it is absolutely water-proof and thief-proof. The cover, which opens on both sides, is flanged down and laps over the upper half of the side wall—cover and wall lock on one hasp. When open, the upper half of the side wall falls forward forming a convenient utility shelf—when up, it fits snugly with the flanged cover forming a completely weather-proof side. In order that the side walls will serve perfectly as shelves they are lined with oak, equipped with strong hinges and strongly supported at each side. The box being of all-steel construction is practically thief-proof.



Space Properly Arranged

Under the double cover is a large tray 54⅛″ long and 36″ wide. This tray is divided in the center by a metal partition, thus forming two separate shelves, each 54⅛″ long and 18″ wide—they are 6″ deep at the center and slope to 2″ at the side. Tape, solder, babbitt and small tools of all kinds can be stored here. When the cover is down the small tools are kept tightly in place.

The large section of the box measures 54⅛″ long, 36″ wide and 30½″ deep. It has a strongly reinforced bottom and is constructed for the storage of heavy equipment—melting furnaces, lead pots, oil cans, rolls of wire, picks, large pipe wrenches, etc.

A 12″ wide tray, 20″ from the bottom of the large section, extends full length of the box. It is placed for convenient handling of medium sized tools and smaller equipment, particularly frequently needed tools. They won't be jumbled in the bottom section with large tools or mixed in with small equipment.

In front of the box is a work bench. It is built between the two channels forming the chassis—many small jobs can be performed on this bench. To further its utility it can be equipped with a pipe vice.

High Speed Running Gear

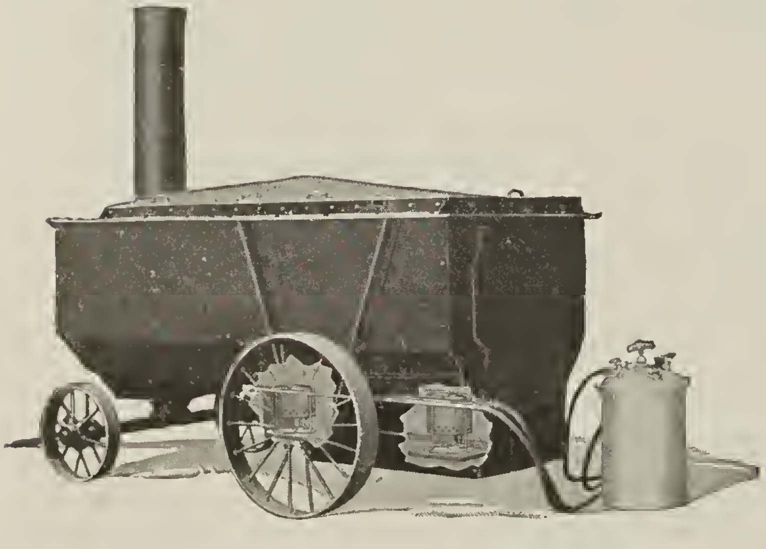
Chassis made of 3″ channels cushioned on heavy helical springs—32″ x 3″ rubber-tired steel wheels equipped with heavy duty roller bearings—1½″ high carbon steel axle—hubs lubricated by large grease reservoirs and protected from dust, dirt and grit by hub caps. And don't forget the steel mud guards! Because of easily adjusted lock-pin, stiff leg can be easily lowered to support box or raised out of the way for trailing. Front end of chassis has unbreakable cast steel pulling eye. For complete specifications see chart on page 19.

LITTLEFORD PORTABLE OIL BURNERS

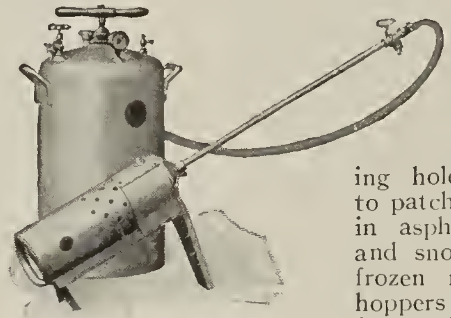
Littleford Portable Oil Burners provide at a very low cost an intense heat which can easily be controlled and adjusted, and conveniently moved from place to place. They are made in two types: the Circular Burner and the Torch Burner. The fuel used is kerosene or a light furnace oil.

Fuel tanks are made of heavy iron double galvanized, and have quick-acting, easy working pressure pump. Burners are easy to start and once started they can be shot to a roaring blaze or simmered down to a very small flame without spitting oil by a simple valve adjustment.

Littleford Portable Oil Burner Units can be put to many uses, some of which are enumerated in the next column. Double and combination outfits are available for use where an unusually large amount of heat is required or where two different jobs are to be done at the same time.



No. 3-C Double Circular Type Oil Burner Unit Installed in a 500 Gal. Asphalt Kettle.



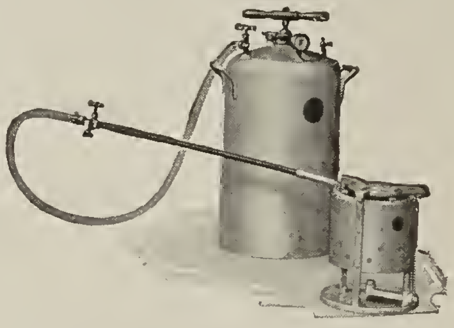
Single Torch Type Oil Burner Units

Used for heating asphalt melting kettles; thawing or drying holes in streets previous to patching; preheating patches in asphalt work; melting ice and snow off manhole covers, frozen railroad switches, and hoppers of coal cars; thawing frozen piles of sand or gravel, etc.

Size No.	1	2	3	4	5
No. of Torch	1	2	3	4	5
Length of Hose (Ft.)	6	6	6	6	6
Capacity of Tank (Gal.)	5	5	10	15	20
Fuel Consumption (Gal. per Hour)	½	¾	1½	2	2½
Suitable for what Capacity Tar and Asphalt Kettle (Gal.)	10	25	50	75	100
Shipping Weight (Lbs.)	35	40	65	80	95

Single Circular Type Oil Burner Units

Used for heating asphalt melting kettles; heating mortar mixing boxes and water for concrete work in cold weather; furnishing temporary heat in boilers or furnaces for testing, etc.



Size No.	1-C	2-C	3-C
No. of Burner	1-C	2-C	3-C
Length of Hose (Ft.)	10	10	10
Capacity of Tank (Gal.)	5	10	15
Fuel Consumption (Gal. per Hour)	1½	2	2½
Suitable for what Capacity Tar and Asphalt Kettle (Gal.)	50	100	150
Shipping Weight (Lbs.)	50	70	85

Double Torch Type Oil Burner Units (Two Torch Type Burners Connected to One Fuel Tank)

Size No.	1	2	3	4	5
No. of Each Torch	1	2	3	4	5
Length of Each Hose (Ft.)	10	10	10	10	10
Capacity of Tank (Gal.)	5	10	15	15	20
Weight (Lbs.)	50	55	75	100	115

Double Circular Type Oil Burner Units (Two Circular Type Burners Connected to One Fuel Tank)

Size No.	2-C	3-C
No. of Each Burner	2-C	3-C
Length of Each Hose (Ft.)	10	10
Capacity of Tank (Gal.)	15	20
Suitable for what Capacity Tar and Asphalt Kettle (Gal.)	300	500
Weight (Lbs.)	105	130

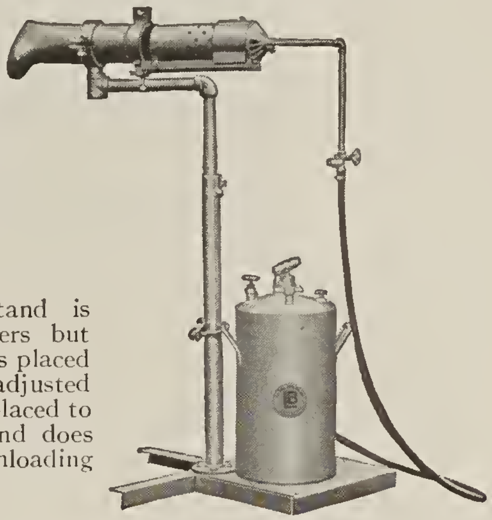
Combination Oil Burner Units (One Circular and One Torch Type Burner Connected to One Fuel Tank)

Size No.	1	2	3
No. of Torch	2	3	5
No. of Circular Burner	1-C	2-C	3-C
Length of Each Hose (Ft.)	6	10	10
Capacity of Tank (Gal.)	5	10	15
Weight (Lbs.)	60	85	110

CONCRETE HEATERS

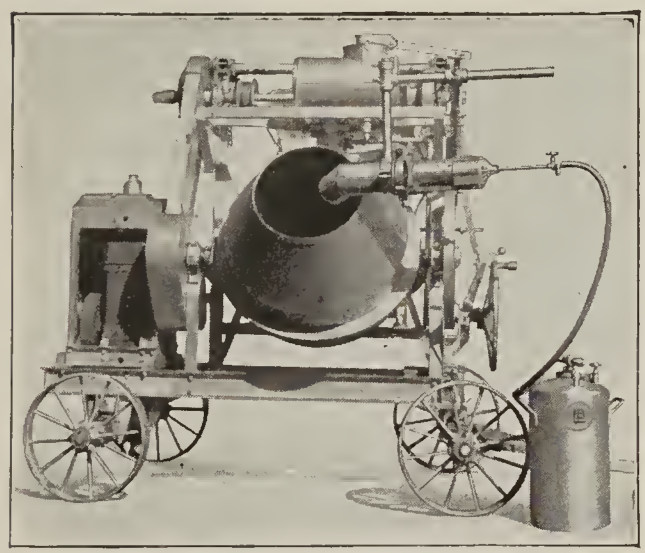
for all types of Mixers

Littleford Concrete Heating Units are made for Mixers of every size and make. There are four distinct outfits: the new Universal Attachment for all tilting drum mixers having a capacity of five cubic feet or more; the attachment for non-tilting mixers; the attachment for 3½ cubic foot tilting drum mixers; and the Universal Stand which is placed by the mixer and not attached to it. The specification chart gives number of unit and capacity of mixer for which it is intended. When ordering a concrete heater outfit be sure to give the name and size of the mixer. By special order we can make up concrete heaters for large 56 cubic foot mixers used in ready mixed concrete plants.



The Littleford Universal Stand is used mostly on mortar mixers but does not attach to them. It is placed in front of the mixer and then adjusted so that the burner is properly placed to heat the aggregate. The stand does not interfere with loading or unloading the mixer.

The new Universal Attachment (Patent Applied For) attached to the operating side of a Jaeger Tilting Drum mixer. No drilling of holes necessary. Notice that the mixer operator is within easy reach of the heater and can swing it toward or away from the drum.



The new Universal Attachment fitted to a Wonder Tilting Drum Mixer. The drum can tilt from loading position to mixing position to discharge position just as though there were no heater there!

CONCRETE HEATER SPECIFICATIONS

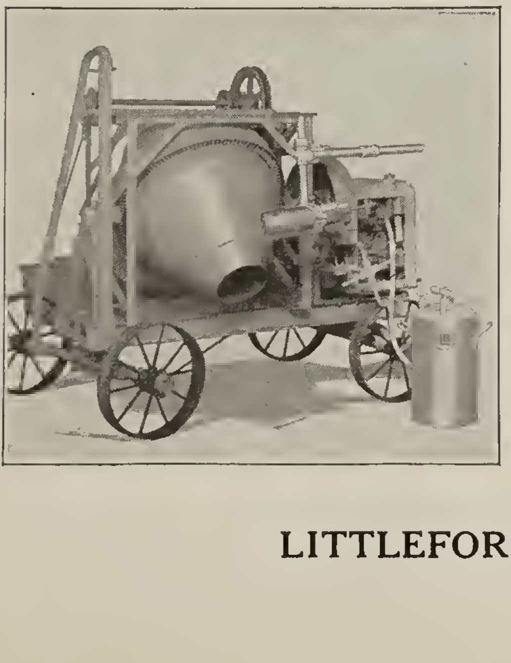
LITTLEFORD CONCRETE HEATERS FOR TILTING DRUM MIXERS FURNISHED IN THREE SIZES AS FOLLOWS

Unit No.	Capacity of Mixer (Cu. Ft.)	Capacity of Fuel Tank Gal.	Length of Oil Hose Feet	Fuel Consumption (Gal. per Hr.)	Shipping Weight Lbs.	Code Word
15	3½	10	10	1	140	CONF
16	5 and 7	15	10	1½	175	CONSIX
17	10 and 14	20	10	2	205	CONSEV

LITTLEFORD CONCRETE HEATERS FOR NON-TILTING MIXERS FURNISHED IN THREE SIZES AS FOLLOWS

Unit No.	Capacity of Mixer (Cu. Ft.)	Capacity of Fuel Tank Gal.	Length of Oil Hose Feet	Fuel Consumption (Gal. per Hr.)	Shipping Weight Lbs.	Code Word
20	5 and 7	15	10	1½	165	COT
30	10 and 14	20	10	2	195	COTH
40	21 and 28	20	10	2½	230	COF

Tanks of 30 gallon capacity can be furnished with any of the above units.

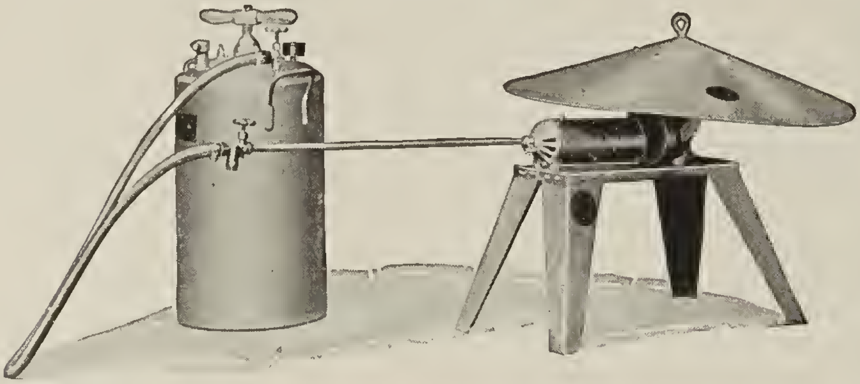


Universal Attachment, a perfect fit on Smith Tilting Drum Mixer. Burner, deflector and Universal Attachment can be assembled and installed in less than five minutes.

Littleford Non-tilter outfit attached to a Rex Mixer. It can be fitted to either loading or discharging side and does not interfere with operation of mixer.

LITTLEFORD BROS., Cincinnati, Ohio

LITTLEFORD OIL BURNING SALAMANDER



Truly a wonderful heat producer. Replaces four to six coke burning salamanders. Burns kerosene or a light furnace oil. Absolutely safe; no dangerous sparks; no smoke to mar walls; flame entirely contained under hood; no fumes to injure workmen; no risk to use it indoors. Flame deflector under hood causes heat to radiate over a large area. Simple to operate. Made in two sizes.

SPECIFICATIONS

Size No.	Diameter of Hood	Fuel Consumption Gal. per Hour	Capacity of Fuel Tank	Weight
1	24″	½	10 Gal.	115 Lbs.
2	32″	¾	15 Gal.	135 Lbs.

LITTLEFORD SALAMANDER No. 41

Where new buildings are being constructed Littleford Salamanders not only increase the comfort and efficiency of workmen, but also keep the frost out of concrete and masonry. They are very useful for drying plaster and damp buildings. Many tobacco growers use them for curing crops in wet weather, and when placed at intervals throughout orchards they will insure adequate protection against frost.

The Littleford Salamander No. 41 has a heavy non-warping grate. Any kind of fuel can be burned. Can be completely knocked-down or set up in a few minutes, making shipping of a quantity economical and storage in a very small space possible.

Accessories which can be furnished include a cover for 6″ smoke pipe connection with hinged lid for charging, and a deflector hood for use where heat should radiate over a large area.

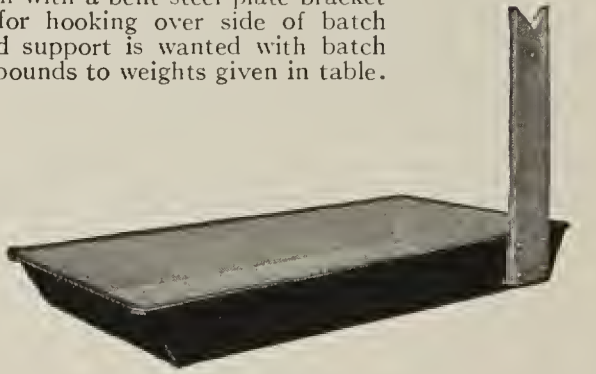
SPECIFICATIONS

Size	No. 1	No. 2	No. 3
Weight	28 lbs.	42 lbs.	48 lbs.
Diameter	15 in.	18 in.	20 in.
Height of Shell	18 in.	21 in.	21 in.
Thickness of Material	No. 18 Ga.	No. 18 Ga.	No. 18 Ga.
Total Height	26½ in.	29½ in.	29½ in.
Floor Clearance	4 in.	4 in.	4 in.

LITTLEFORD BATCH BOXES

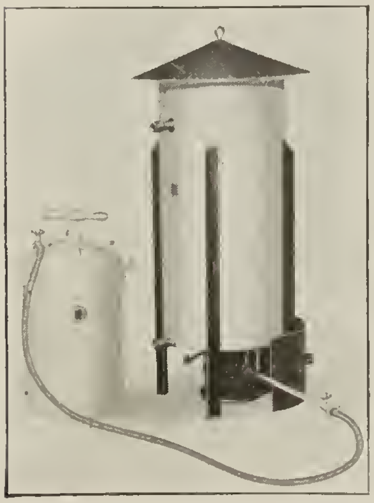
For mixing mortar, cement, etc. Much superior to cumbersome leaky wooden mixing boxes. Made from one piece of No. 16 gauge steel with the four corners welded absolutely leak-proof. Perfectly smooth inside and out. Light in weight; easily handled; top reinforcing edges at ends make convenient hand-holds for lifting. By placing batch box over a fire, mixing can be done in freezing weather.

Wooden hod support shown is optional. It is 52″ high with a bent steel plate bracket at bottom for hooking over side of batch box. If hod support is wanted with batch box add 27 pounds to weights given in table.



SPECIFICATIONS

Size No.	Depth	Width	Length	Capacity Cu. Ft.	Weight Pounds
1	10½″	30″	48″	7½	50
2	10½″	36″	72″	14½	80
3	10½″	36″	96″	19½	115
4	10½″	48″	72″	19	110
5	10½″	48″	96″	26	140



THE OIL BURNING WATER HEATER

(Patent Applied For)

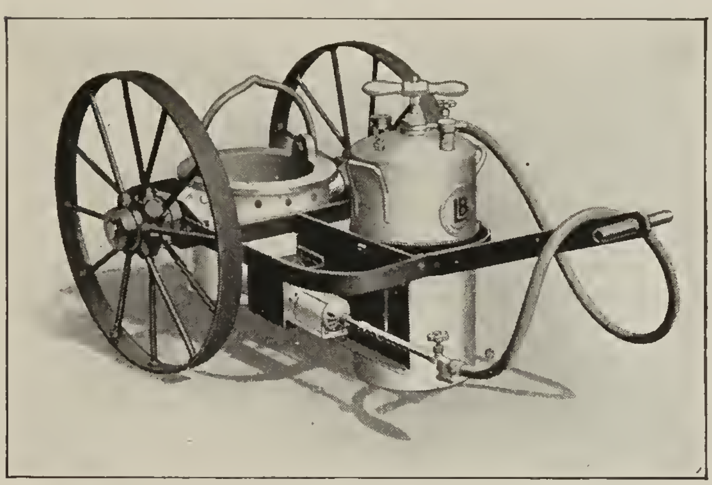
Outside temperature 18 Fahrenheit. Temperature of water entering water heater 33. Temperature of water leaving water heater at the rate of 300 gallons per hour, 175! How is that for a supply of hot water?

You will get a constant stream of hot water from the Littleford Oil Burning Water Heater. Cold water first enters a jacket and then passes through a double series of coils. A Littleford Circular Type Burner furnishes the necessary heat and is controlled by one valve to a simmering flame or a roaring blaze as needed. Hose couplings for water inlet and outlet are not furnished as most contractors have these fittings on hand.

The cone-shaped cover over the heater keeps the heat of the burner within the cylinder walls. No heat is lost by radiation because the water flowing into the cylinder jacket thoroughly insulates the coils from outside temperature. Order your Littleford Water Heater now and be ready for cold weather. Jacketed or non-jacketed Water Heaters—oil or wood burning types.

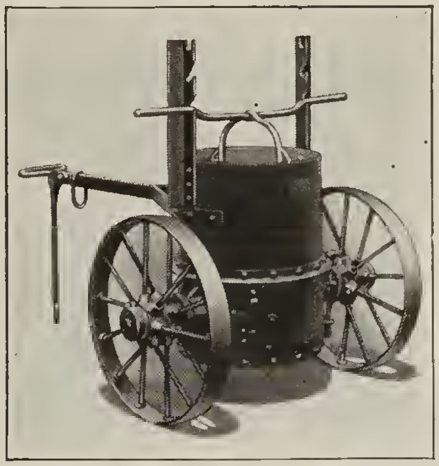
LITTLEFORD BROS., Cincinnati, Ohio

LITTLEFORD *Lead Melting* FURNACES



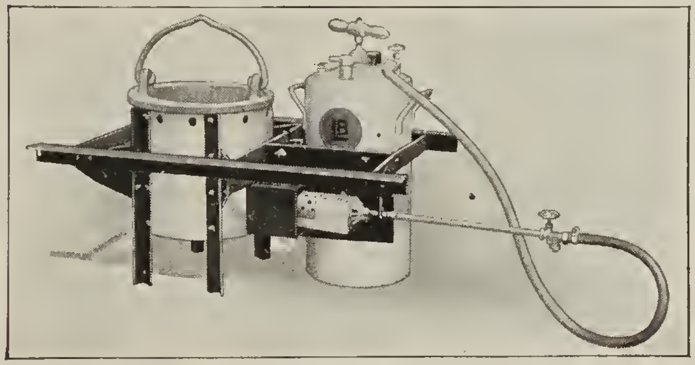
Portable Oil Burning Lead Furnace No. 33-OB

NO. 33-OB is equipped with 30″ diameter, roller bearing, steel wheels and has a loading height of 20″ above the ground—its center of gravity is so low that the outfit cannot be upset. Oil Burner and fuel tank can be easily removed for heating new pipe joints or melting lead from old ones. Capacities: 250, 350 and 450 pounds.



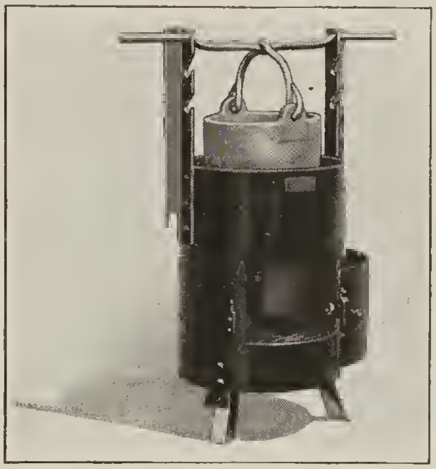
Lead Furnace No. 33

PORTABLE Wood Burning Lead Furnace No. 33 is made of heavy plate steel—fitted with fire-door, removable cast-iron grate, rack and crossbar for adjustment of melting pot. Roller-bearing wheels are 26″ in diameter, axle 1½″ diameter. Melting pot made in 250, 350 and 450 pound capacities.



Stationary Lead Furnace No. 26-OB

NO. 26-OB, although a stationary outfit, can be easily moved from one position to another. The carrier rack enables workmen to lift entire unit. If oil burner and fuel tank are needed for other heating they can be quickly detached. Melting pot made in 250, 350 and 450 pound capacities.

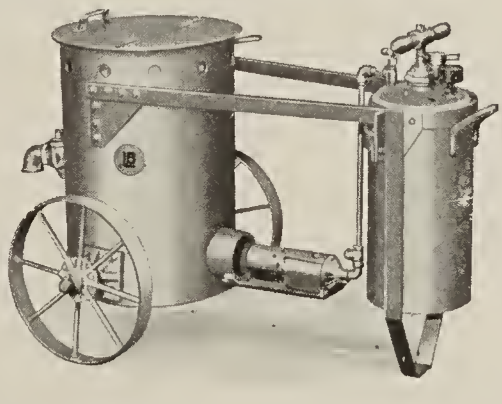


Lead Furnace No. 26

STATIONARY Lead Melting Furnace No. 26 has a heavy plate steel shell with angle iron legs, fire-door, cast-iron removable grate bars, rack and cross bar for adjustment of melting pot. Made in 250, 350 and 450 pound capacities.

The Lead Compound Furnace

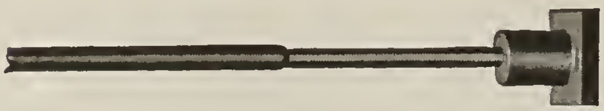
AN outfit designed and constructed for the purpose of melting leadite, hydrotite and other lead compounds. Melting tank has rounded dish bottom made of $\frac{3}{16}$″ steel. Made in 10 and 25 gallon capacities.



LITTLEFORD BROS., Cincinnati, Ohio

LITTLEFORD PAVING TOOLS AND POURING POTS

Asphalt Tampers



Cast iron with steel stub cast in. Iron pipe handle 4′-6″ long.

No.	Size	Weight
1190	2½″ x 5½″	16 lbs.
1191	6″ x 6″	32 lbs.
1192	6″ x 8″	36 lbs.
1193	8″ x 8″	40 lbs.

Asphalt Smoothers

Cast iron with steel stub cast in. Iron pipe handle 5′-6″ long.

No.	Size	Weight
1194	6½″ x 10½″	46 lbs.
1195	7½″ x 14½″	65 lbs.

Asphalt Rakes

Long steel shank permits placing head in fire. Head 15½″ long; teeth 3½″ long; handle 6′ 6″ long; weight 5 lbs.

Asphalt Picks

Forged and tempered. Length 25½″. One cutting edge and one point. Furnished without handles unless otherwise ordered. Weight 8 lbs.

Asphalt Cutters

Forged and well tempered. 21″ long; 3½″ cutting edges. Furnished with either single or double eye. Handles not furnished unless specified. Weight 9 lbs.

Asphalt Shovels

Solid socket and flat square point. Regularly furnished with D type handle as shown. Long straight handles furnished when desired. Weight of D handles shovel 5 lbs.—straight handled shovel 6 lbs.

Asphalt Forks

All steel with tubular handles. 10″ wide; 13½″ long, 8 tines; 1⅛″ between tines; overall length 43½″; weight 8 lbs.

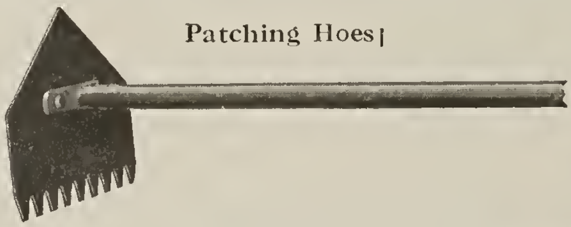
Push Brooms

Furnished in bass or wire. Head 14″ long. Furnished with handle unless otherwise ordered. Weight of bass broom 3 lbs.; wire broom 4 lbs.

Squeegees

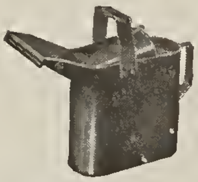
For spreading bituminous grout and seal coats. Double edge blade made of a rubber composition; 20″ long. Blade renewable. Handle all steel 6′ 1″ long. Weight 11 lbs.

Patching Hoes



Serrated edge 10″ wide; handle 7′ 10″ long; weight 11 lbs.

Asphalt Pots



Pouring Pot No. 85
4 gallon capacity
Weight 7 Lbs.

Carrying Pot
No. 87
7 gallon capacity
Weight 7 Lbs.

Brick Filling Pot
No. 86
4 gallon capacity
Weight 7 Lbs.

Sprinkling Pot
No. 87-A
4 gallon capacity
Weight 6 Lbs.

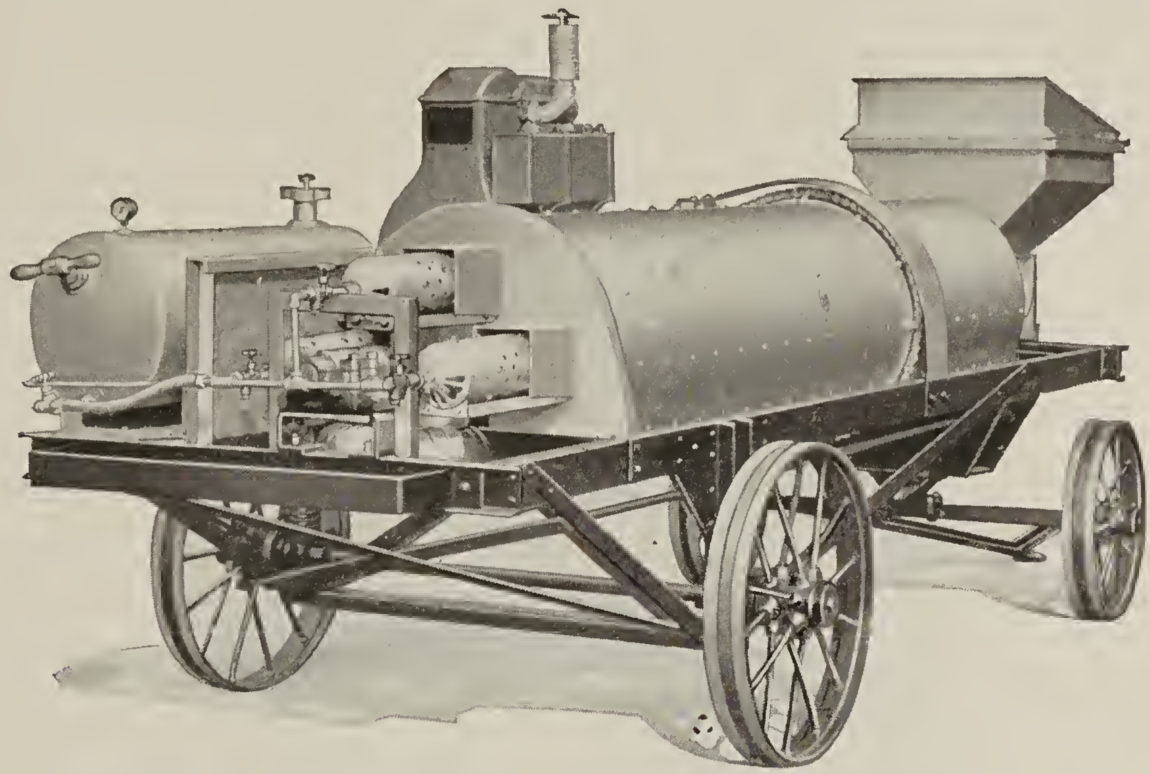
Made of sheet steel with welded seams, in four styles. All have non-spilling hoods. Nos. 85, 86 and 87A have removable screens to prevent foreign matter from entering pot. No. 85 pot has 8″ wide adjustable nozzle. Nozzle on No. 86 pot is adjustable to ¼″, ⅜″ and ½″ diameter. No. 87-A pot has sprinkling rose.

Asphalt Dippers

Made of No. 18 gauge galvanized iron with rolled wire edge. Selected hickory handle.

Size No.	Capacity Quart	Handle Length Feet	Weight Lbs.
1	6	6	5
2	9	8	7

LITTLEFORD BROS., Cincinnati, Ohio



LITTLEFORD SAND-DRYER No. 89

(Patent Applied For)

A first class portable rotary sand dryer and heater that will produce large or small quantities of hot sand at a very low cost per yard. This hot sand can be produced exactly where or when you want it. No time or money lost waiting for hot sand. Capacity 20 cubic yards per 10 hour day, sand having a moisture content of not more than 5% with outside temperature not lower than 40°F.

Three Littleford Oil Burners furnish necessary heat. Under normal conditions only two burners are required, the third burner is to take care of exceptionally wet, fine sand. Consumption of each burner, 2½ gallons of kerosene per hour.

An Air Cooled gas engine furnishes necessary power. The surplus air from motor is trapped and used to drive off the moisture, an exclusive Littleford patent feature. Engine consumes 1½ gallons of gasoline and 1 pint of oil per 10 hour day. With these figures you can readily determine the cost of operation.

Now, if you are interested, let's continue. This dryer is the result of twelve years experiments to dry and heat wet sand successfully. The motor which drives the heating cylinder has a throttle control and therefore can be regulated to any speed. The burners can be operated individually. This makes this dryer very flexible and assures you of a good supply of hot sand at all times.

Here is the operation. The wet sand is shoveled into the loading hopper and is automatically fed into the revolving cylinder by means of a special conveyor. The cylinder is driven by a New-Way Air-Cooled gas engine thru a heavy roller chain. By means of a series of flights the sand is cascaded thru the heat and carried toward the discharge end of dryer. The cylinder revolves on a shaft operating in dust-proof oil ring bearings. All the surplus air from engine passes thru the drying cylinder and drives off the moisture or steam generated by the oil burners. This is an exclusive Littleford feature. In order to produce dry, hot sand it is necessary to drive out the steam, keep the sand aggitated and provide sufficient heat. This is all done with the Littleford Dryer.

If you need a portable sand dryer that is easily handled, one that will produce hot, dry sand quickly, you should buy the Littleford Rotary Dryer.

SAND DRYER SPECIFICATIONS

Capacity (Moisture 5 Per Cent, cubic yards in 10 hours)	20
Over-all Length	13′ 5″
Over-all Width	6′
Engine Horse-power	10
Number of LB Torch-Type Burners	3
Capacity of Fuel Tank, Gallons	30
Fuel Consumption (One Burner per Hour)	2½
Diameter of Front Wheels (Steel tired roller bearing)	26″
Diameter of Rear Wheels (Steel tired roller bearing)	30″
Diameter of Axles (Spring Cushioned)	1½″
Shipping Weight (Lbs.)	3060
Code Word	SANDRY

LITTLEFORD BROS., Cincinnati, Ohio

"THE FEIGEL" ROAD COVERING MACHINE

"EUREKA!"

Cried the Road Builder

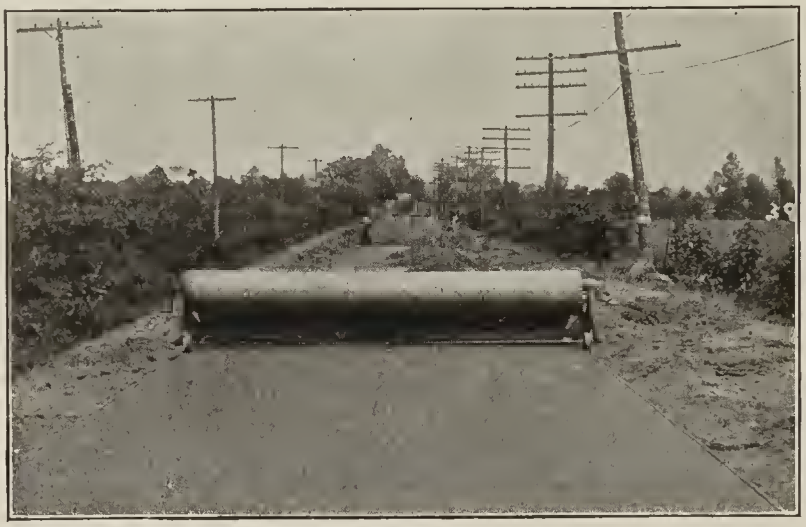
Its value attested by Successful Contractors.

* * *

Has brought success to others, will bring success to YOU.

* * *

Every customer becomes a BOOSTER FOR THE FEIGEL.



Savings in time, men, labor and money soon pays for it.

* * *

No great expenditure involved, best investment that can be made.

* * *

Satisfying results compensates for all outlays for THE FEIGEL.

The FEIGEL runs smoothly over the form on four wheels which have extra wide flanges, which prevent the wheels from running off and making possible proper guiding and untroublesome operation over the tracks.

The FEIGEL is easily operated from either side by one man. The Blanket is kept in the best condition in all kinds of weather. It is easy to roll and unroll—and any amount may be laid at a time—the blanket lays smooth on the road—it never mars nor scratches the pavement. It helps to produce a pavement which is bound to satisfy.

Satisfied road builders, our pleasure in serving them a long felt need, and our increasing output enables us to furnish you these "Men-Time-Labor-Money" Savers at exceptionally low prices, all subject to change without notice.

MACHINES

9 ft. to 18 ft. roadway, non-adjustable—1-roll	**$220.00**
20 ft. roadway—1-roll	**240.00**
18 ft. and 20 ft. roadway, adjustable—1-roll	**290.00**
9 ft. to 18 ft. roadway, non-adjustable—2-roll	**280.00**
20 ft. roadway—2-roll	**300.00**
18 ft. and 20 ft. roadway, adjustable—2-roll	**380.00**

ATTACHMENTS FOR

9 ft. or 10 ft. machine to 18 ft. roadway	**$75.00**
9 ft. or 10 ft. machine to 20 ft. roadway	**95.00**
2-Roll Attachment for any machine without extra roll	**30.00**
Extra Roll	**30.00**
2 ft. Lattice Frame Extension	**20.00**

ALL PRICES
F.O.B.

Manufactured by
H. LINTZ & SON

FORT BRANCH
INDIANA

THE FEIGEL ROAD COVERING MACHINE

$220.00
to
$380.00

SAVES TIME—SAVES MEN—SAVES LABOR
SAVES MONEY

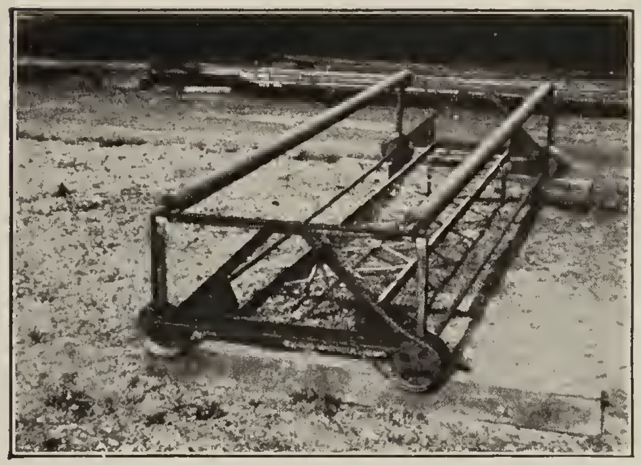
All Prices
F.O.B.
Fort Branch

Just What the Highway Builder Has Always Wanted

Indispensable In Laying Good Roads Successfully

Machine is easy to assemble. Not difficult to transport. No complications. No difficulties. Parts always easy to attach or detach. Durable in construction. Valuable in operation. Our name behind it. Instructions for assembling machine comes with each FEIGEL.

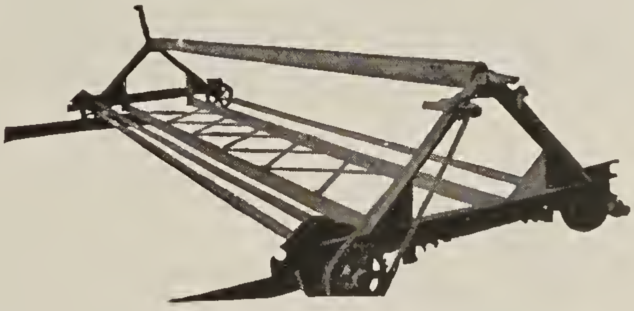
Built for Speed—Built for Service



Protects the Surface

The FEIGEL weighs 1,000 pounds, shipped in seven pieces, easily handled by two men. The machine comes equipped with two side frames, one lattice frame, one four inch pipe roller, 1 bundle of 2 pipe shafts and one pipe bar, 1 bundle of four wheels, 1 box containing 1 large sprocket, 2 cranks, 6 collars, 1 bearing and sprocket, 5 keys, 1 length of number 51 chain and bolts.

The FEIGEL Frame is made of the highest grade of structural steel, well braced and hot riveted. No better workmanship could be put into the erection of any machine. All parts of standard sizes. No delay in getting parts. Your problem is our concern. The FEIGEL is Bound to Satisfy.



Bridgeplank Spans the Road

FEIGEL made for all width roads. We gladly submit prices. Made with 1 or 2 Rolls. Successful contractors use the FEIGEL.

Our Machines In Use All Over the Country

H. LINTZ & SON

FORT BRANCH, INDIANA

"Everything for the Concrete Contractor The Most Complete Line in America"

Heltzel Superior Lock Type Road Forms

The rails are pressed from 3/16″ open hearth steel, and are 10 feet long. All rails are hand trued by skilled labor, after the mechanical pressing.

Both base and tread are double-flanged, giving an unusual rigidity to the rails. The tread is 2½″ wide, which also gives extra reinforcing and materially increases the traction surface.

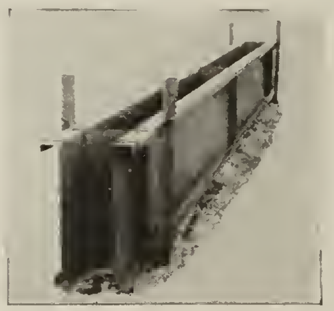
Lock Joints are of the tight-wedge type, and are hot pressed from ¼″ steel plate. The Superior Lock Joint is rigid at all times, yet causes no difficulty in setting the forms on curves and grades.

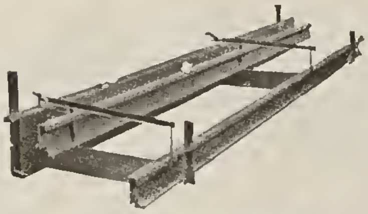
Stake Pockets are hot pressed from ¼″ steel plate. They are designed to avoid clogging by the concrete, and to brace the back edges of the flanges, where reinforcement is of most value.

Stakes are 1″ in diameter and are specially heat treated to an unusual degree of hardness.

Heltzel Utility Forms

These forms can be used for straight curb, battered curb, and curb and gutter work. Supported on notched angle stakes with clip hangers. Adjustment to grade and alignment of forms extremely simple. Rails are twelve feet long, but can be furnished in ten foot lengths when so ordered. One stake at each rail intersection insures rigidity. With Heltzel Utility Forms, fewer parts are handled and greater efficiency and rigidity are assured.





Division plates are made with wings extending full depth of the rail. Rails cannot spread at top or bottom and are not disturbed in removing division plates.

We can also furnish forms for Yoke Type Curb construction and Integral Curb and Base construction, as well as radius forms of all types, both rigid and flexible.

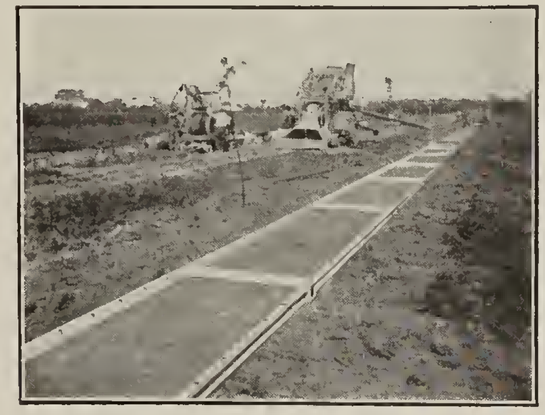
Write for further information.

Manufactured by

THE HELTZEL STEEL FORM AND IRON CO.

Warren, Ohio

"Everything for the Concrete Contractor The Most Complete Line in America"



Heltzel Steel Sidewalk Forms

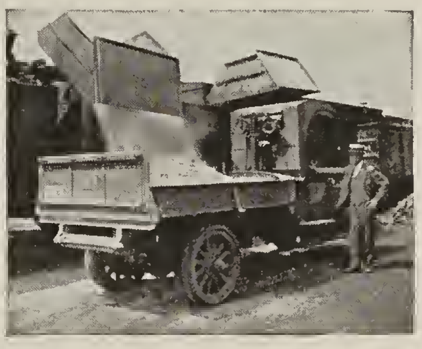
Heltzel Steel Sidewalk Forms not only save time and money but a better job results from their use. Many contractors have been using their Heltzel Sidewalk Forms over and over, year after year, for 12, 15, and 18 years.

Heltzel Steel Forms are low in first cost and cost less to use than any other sidewalk form manufactured

Write for catalog.

Heltzel Lightning Car Unloaders

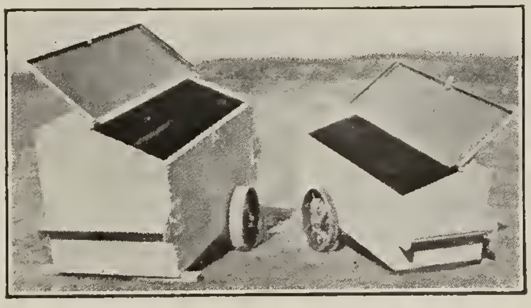
Popularly Known as the Heltzel "Car Batcher"



Keep your shovelers busy when the trucks are away and keep your trucks always on the move. Heltzel Car Unloaders will save one-third of your car unloading cost.

Just four parts—brackets, pan, sideboards, and door. Strong enough for all ordinary conditions, yet light enough to be easily handled. Adjustable to any gondola type car. Furnished in a wide range of sizes.

Write for further information.



Store your tools in a Heltzel Box. You will no longer be annoyed by petty thievery and the tools will be protected from the weather.

Heltzel Boxes are manufactured so as to permit adding skids or wheels. The ends are equipped with sturdy handles, to which chains can be quickly attached for moving with a truck.

The bottom and sides are pressed from a single sheet of steel. The door is also of one piece, flanged to make the box weather tight when closed.

We can also supply you with any of the Heltzel products listed below. Information and prices will be furnished on request.

- Trail Graders
- Adjustable Traveling Bridges
- Burlap Laying Bridges
- Utility Bridges
- One Man Bridges
- Subgrade Testers
- Hand Floats
- Straight Edges
- Hand Screeds
- Bulkheads
- Precast Pipe Molds
- Sewer Forms
- Tunnel Forms
- Manhole Forms
- Mixing Boxes
- Coal Chutes

Manufactured by

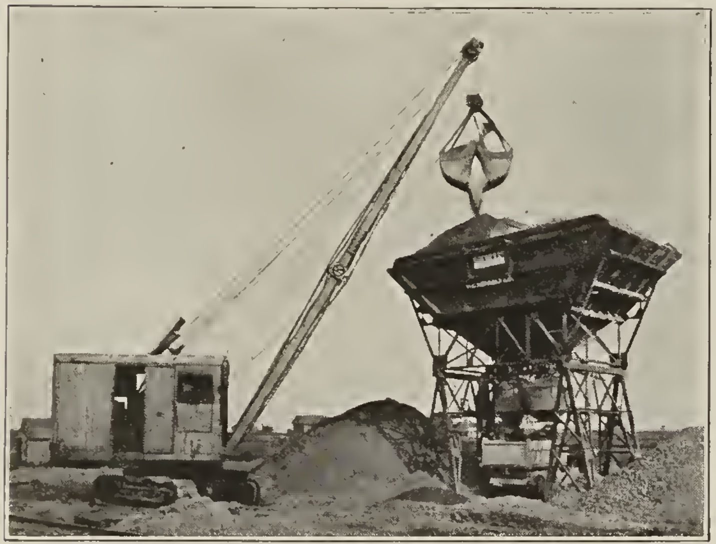
THE HELTZEL STEEL FORM AND IRON CO.

Warren, Ohio

JOHNSON BATCHERS and BINS

The C. S. Johnson Co.

CHAMPAIGN, ILLINOIS

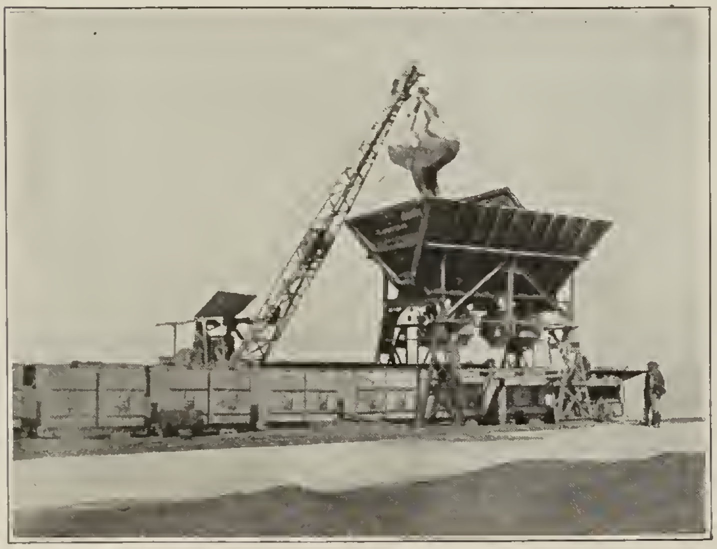


Johnson Demountable Bins

For Road Building and Central Mixing Plants

For paving and large concrete construction projects contractors are finding Johnson Batchers and Demountable Bins a good investment. The fully assembled steel units insure speedy and easy installation and quick moving from job to job at a minimum of cost. They can be completely erected or taken down in less than an hour. They are shipped in complete units and require no bolting or riveting in the field. Capacity need not be sacrificed to obtain this portability and ease of handling. Johnson Demountable Bins are furnished in sizes ranging from 13 yards to 165 yards capacity. They are also furnished in 1, 2 or 3 compartments as required.

Ample strength is provided in all Johnson Demountable Bins. The steel frame provides permanent strength in all load supporting parts. Wood sides or panels which have proved fully satisfactory, are provided for convenience and economy. There are no plates less than ¼″ in thickness; and no rivets smaller than ¾″ diameter used in Johnson Bins. No bolts in shear are depended upon for supporting the load.

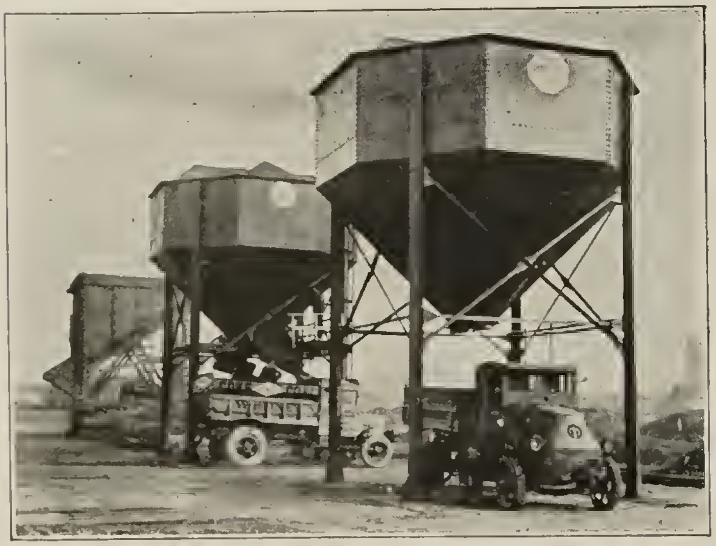


Johnson Industrial Demountable Bins

For Industrial Railway Service

The Johnson Industrial Bin is also of demountable construction but is specially designed for industrial railway hauling. The measuring hoppers are set on a center line parallel with the length of the bin which permits discharging the aggregates into several batch boxes simultaneously. Two or four hoppers can be attached, although four are recommended as the loading time is thus reduced by half. Our hoppers can be fitted with gang operating parts and thus be operated simultaneously by one man only.

Johnson Industrial Bins embody the same superior features of construction that are found in the standard demountable types, and because of their ease and economy of installation and operation are the most efficient bins for industrial railway hauling.



Johnson Octo Bins

Johnson Octo Bins are provided for permanent locations. They are very economical where large capacity is wanted. For Ready Mixed Concrete Plants the Octo Bin is found useful. These bins are furnished in sizes ranging from 100 tons to 600 tons capacity. They are furnished in 1, 2, 3 or 4 compartments. They can also be furnished with special gates and used for handling coal and coke.

The octagon shape design of the Johnson Octo Bin provides greater strength for a given diameter than a round or circular bin of the same diameter. Shop riveting is used to the fullest extent possible, thus reducing field bolting or riveting to a minimum. This construction saves field erection expense, gives great strength and safety and insures long life.

JOHNSON BATCHERS and BINS

The C. S. Johnson Co.

CHAMPAIGN, ILLINOIS

Johnson Batchers

The simplicity of the Johnson Batchers, both weight and volume type, applies to both their construction and operation. A filling valve easily opened by a short movement of a lever allows the material to freely enter the batcher. The flow of material can be controlled by the easily operated cut-off type fill valve. Jam proof valves are furnished for the stone or gravel batchers which guarantees quick operation and accurate batching.

The Round Shape of the batchers prevents hang-up of any of the material and insures complete discharge of the batch.

There are no complicated parts to operate—no ropes, latches or pulleys used. Just simple fool proof construction.

Volume Measuring Batchers

Johnson volume batchers are designed so they can be set for a measured amount of material. A graduated gauge stick is fastened on the batcher for setting to the required amount. The adjustment is made easy by means of chain suspension and wing nuts for fine adjustment. The filling valve easily opened by a short movement of a lever allows the required amount of sand or gravel to flow into the hopper and is then closed. The visual check gives certainty that the hopper is completely filled. A measured batch of material is then in the hopper ready for use and is readily released into truck, car or mixer by opening the discharge valve.

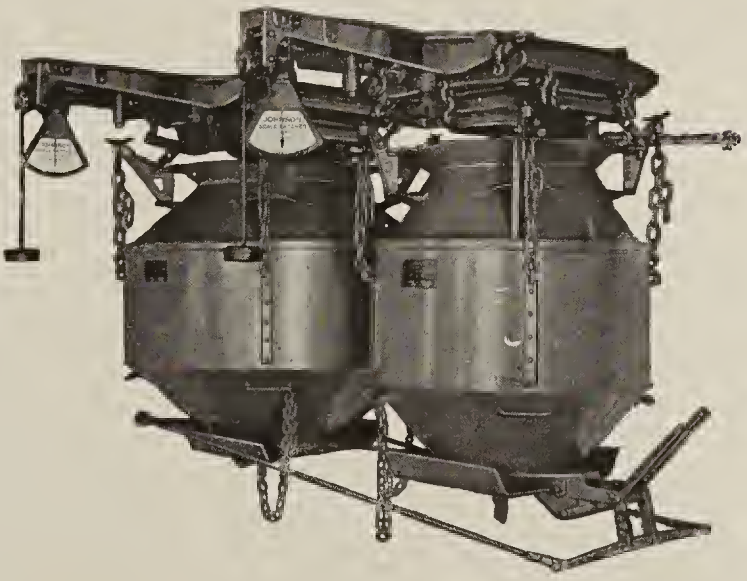
Scale Batchers

Johnson Scale Batchers are a combination of the volume batcher and a scale attachment. This gives a dual result, both weight and volume measurement. The scale is of beam type with a beam balance indicator for indicating approaching load and under and over-load. The beam is graduated to give one pound readings.

The scale construction is of cast steel or brass or bronze parts. There is no cast iron or breakable material used. The knife edges are of special steel, heat treated to give lasting service.

Adjustment of the scales is simple, any operator can keep the scale in balance at all times. These scales meet the State Highway Specifications and are approved by the Highway Departments.

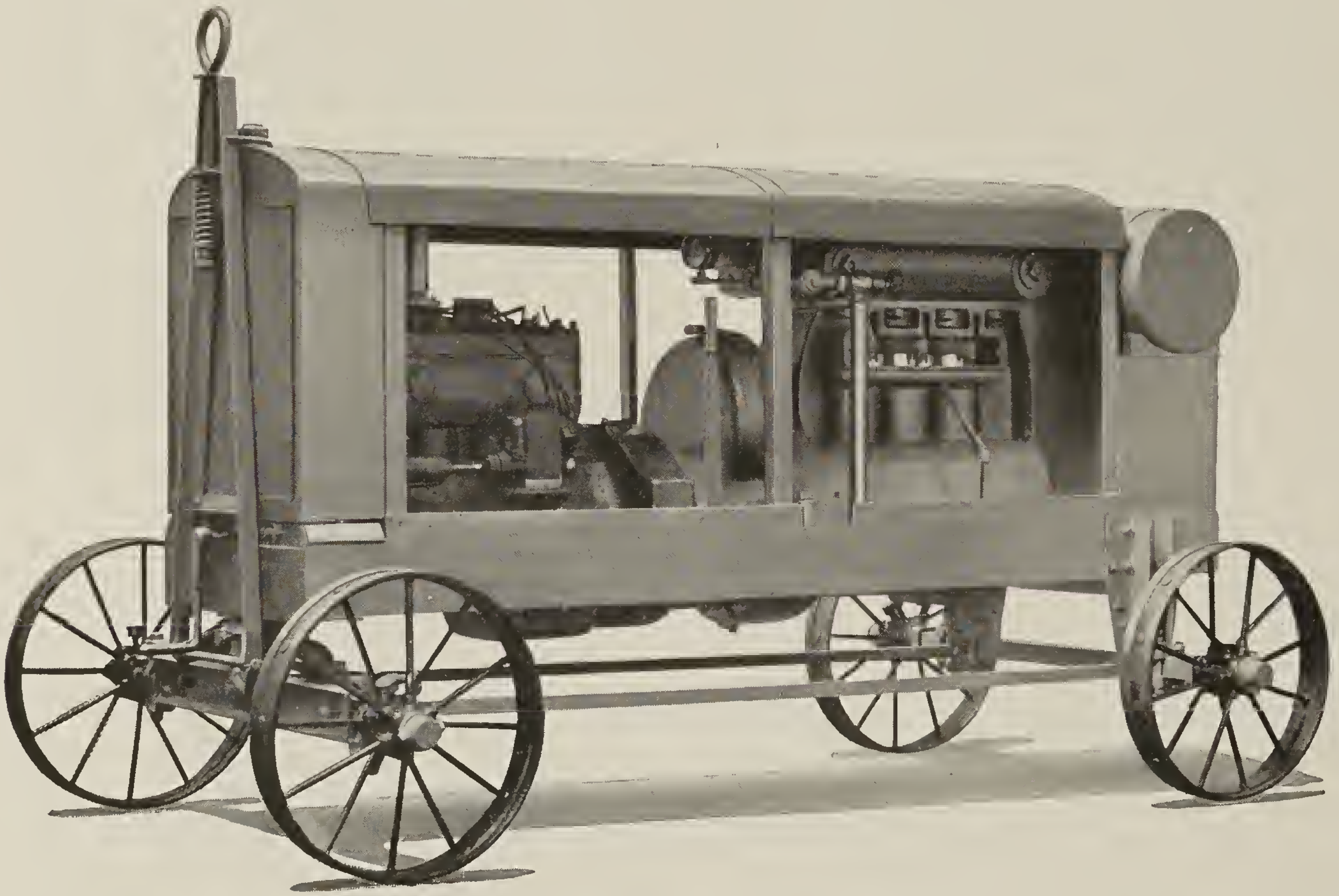
The operation of the Scale Batchers is the same as with the Volume Batchers. The material is cut-off when the beam balance indicator shows zero. The same ease of filling and discharging is obtained.



Full information on all types of Johnson Bins gladly sent on request

REX PUMPS

Made by Chain Belt Company, Milwaukee.



FOR 27-E PAVING JOBS

Totally Enclosed—Self Lubricating

The Rex is the proper size pump for a 27-E paver but can be used economically on jobs where smaller pavers are used. Its capacity is large enough to supply sufficient water to a 27-E paver besides furnishing water for sprinkling, curing etc.

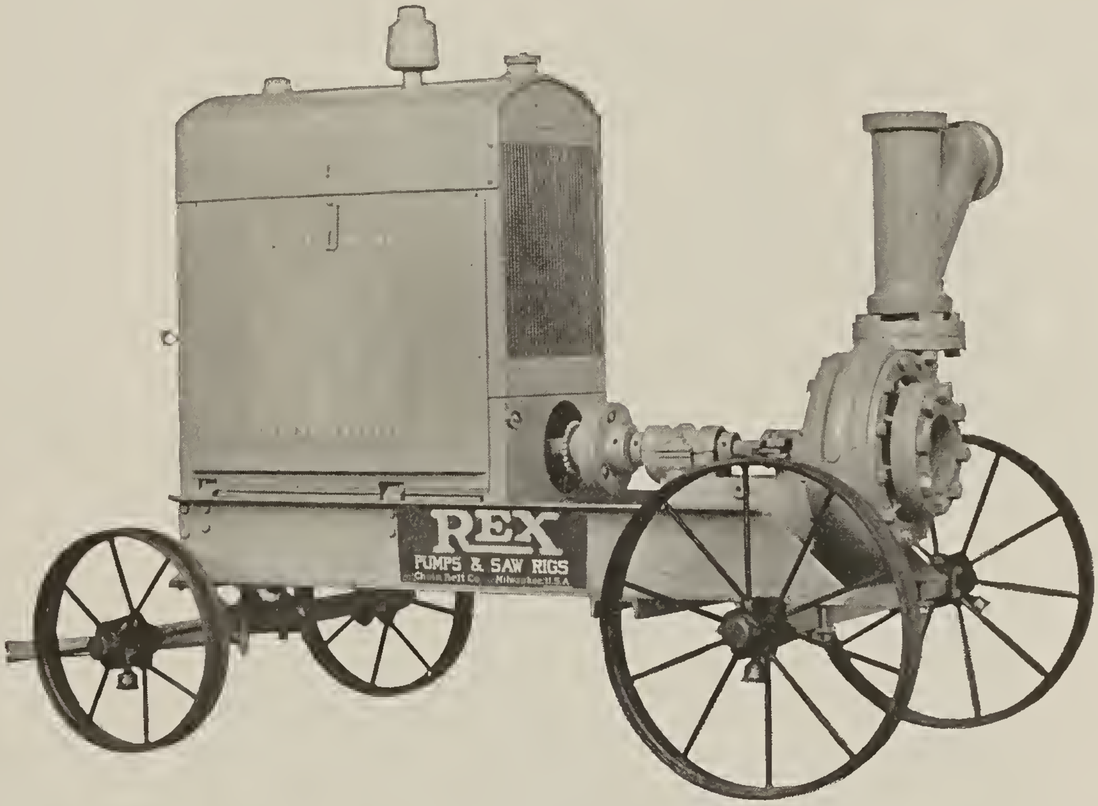
A large range of speed control on motor permits handling large or small quantities of water at low or high pressures. This gives the contractor control over water conditions, impossible with the average one speed pump outfit.

The Rex is the latest in pump design. It is built like an automobile motor, is totally enclosed and is equipped with an oil pump which supplies a continual flow of oil to the working parts of the pump.

The entire machine, engine and pump, is built into one complete unit which makes a close compact design and eliminates any possibility of the parts getting out of alignment as is possible with machines having a separate engine and pump.

REX PUMPS

Made by Chain Belt Company, Milwaukee.



These centrifugal pumps are designed to fit the average contractor's maximum and minimum requirements. The C-5 with 15 horsepower engine can handle the average maximum conditions encountered on most jobs. See specifications for capacities of various sizes.

A large range of speed control on motor permits handling large or small quantities of water at low or high heads. This gives the contractor control over water conditions, impossible with the average one speed pump outfit.

A clutch mounted between engine and pump gives easy starting and eliminates chances of losing prime when starting the pump.

The intake and discharge openings are the same size and this avoids the necessity of expensive oversize suction hose. Having the same size suction and discharge means easy change between fittings from one end to the other.

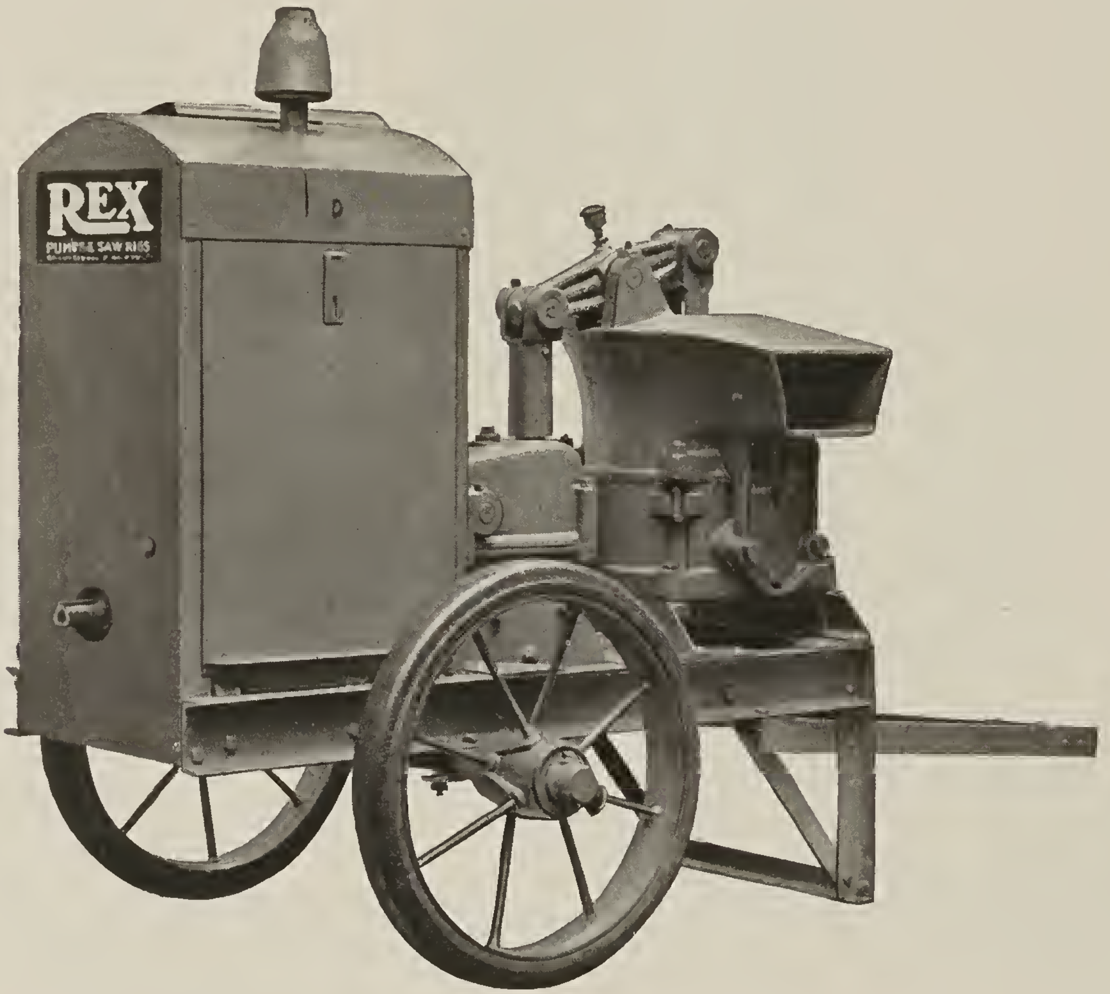
Specifications — Centrifugul Pumps

Model No.	Size		LeRoi Power	Capacity, Gal. per Minute	Head, Feet
	Suction	Discharge			
C-3	3″	3″	4 H.P.	250	40
C-4	4″	4″	8 H.P. 2 cyl.	400	45
C-5	5″	5″	15 H.P. 4 cyl.	600	40

Model No.	Size Wheels		Overall Dimensions		Weight, Pounds
	Front	Rear	On Skids	On Trucks	
C-3	3″x14″	3″x20″	1′-10″x4′-6″	2′- 4″x4′-6″	725
C-4	3″x14″	3″x20″	1′-10″x4′-6″	2′- 4″x4′-6″	900
C-5	3″x14″	3″x20″	2′- 2″x5′-3″	3′-10″x5′-6″	1160

REX PUMPS

Made by Chain Belt Company, Milwaukee.



Rex Diaphragm Pump with Enclosed Drive and Le Roi Engine

The Rex diaphragm pump is built to give the contractor the maximum service at the lowest maintenance cost. The main working parts are enclosed and operate in a bath of oil. The internal mechanism consists of machine finished parts with phosphor bronze bushings.

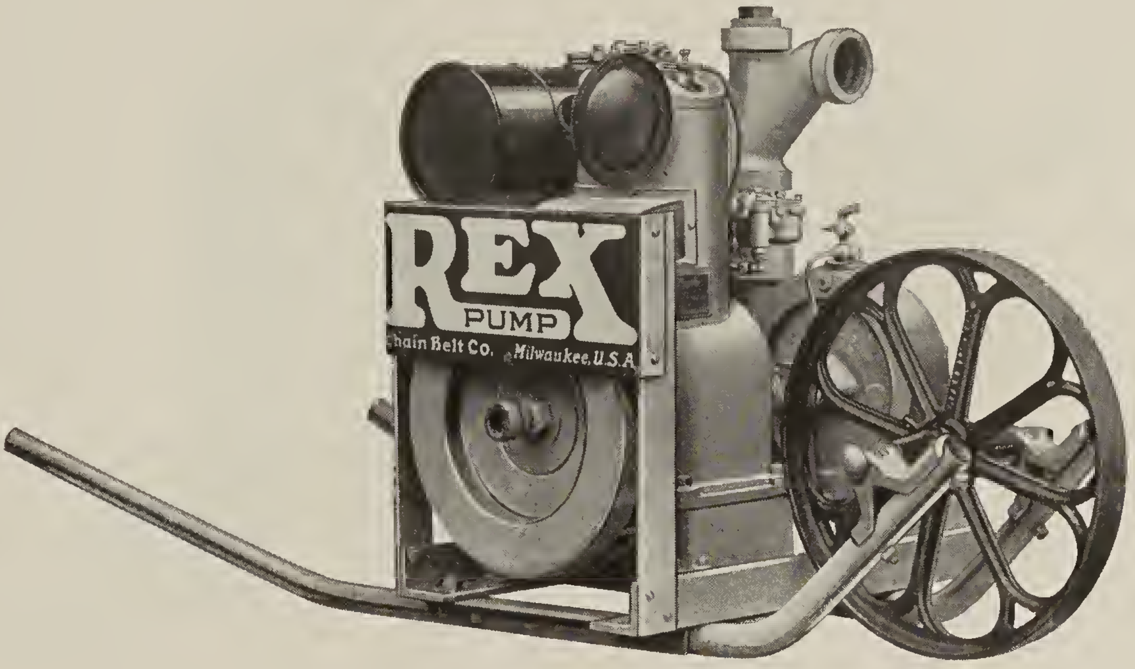
This pump is built in several sizes and can be furnished in either the single or double diaphragm units. Power furnished is the Le Roi engine which is also fully enclosed. Either two or four wheel trucks can be supplied.

We can also furnish this same pump with open gearing and a horizontal engine which unit sells for less money than the enclosed model. This machine is furnished in the single diaphragm type only.

The design of the Rex permits easy and quick changing of diaphragms which is an essential point on a diaphragm pump.

REX PUMPS.

REX WATER BOY CENTRIFUGAL PUMPS



The Rex Water Boy is a 2″ centrifugal pump, capable of handling 93,000 G.P.H. and 50 ft. heads. It is mounted on a wheelbarrow frame, assuring portability with ease for it weighs only 300 pounds. It is 23″ wide which makes it easy to pass through a small opening.

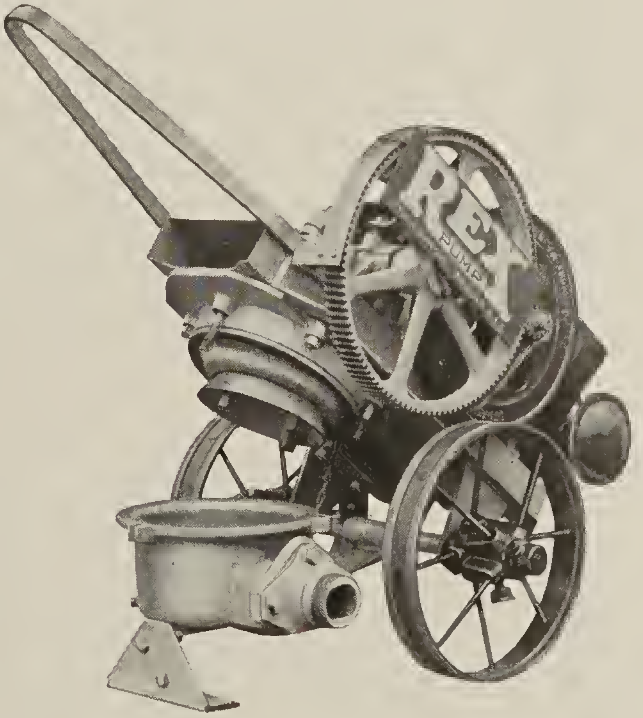
The engine is of the automobile type, air cooled, and self oiling. It is fully equipped with carburetor, high tension magneto, spark plug and everything.

THE REX 3″ DIAPHRAGM PUMP

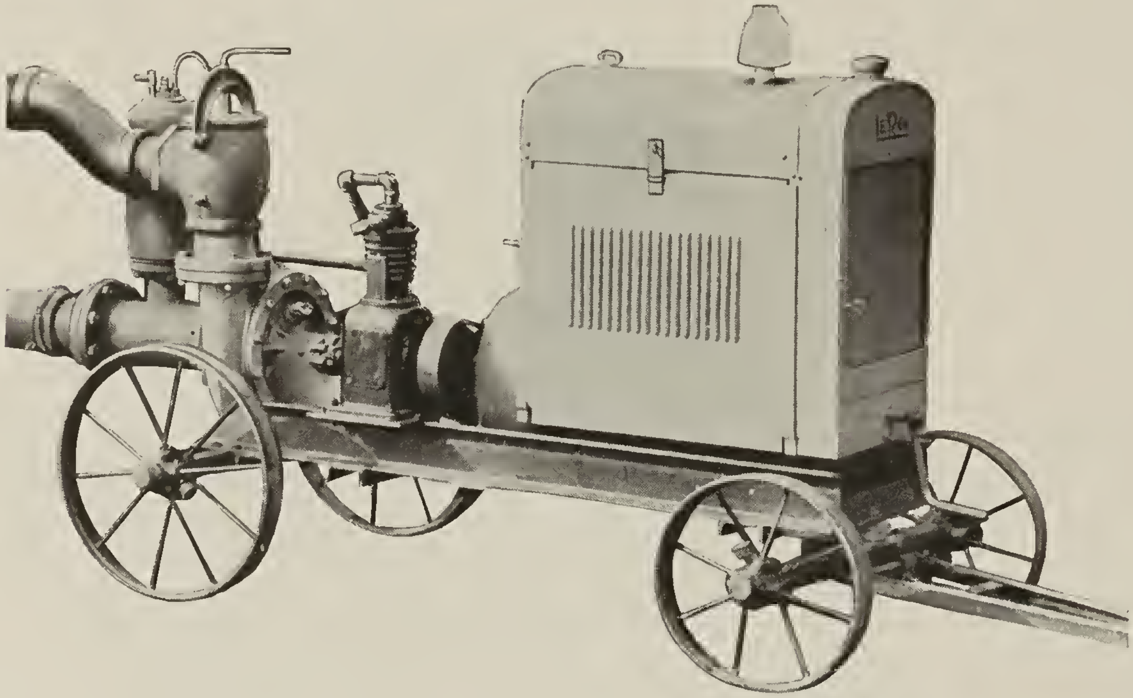
The Most Compact Pump Built

Rex has achieved the most compact 3″ diaphragm pump on the market by making the pump unit an integral part of the frame. Two meshing gears form the power take off. There are five less working parts on the Rex 3″ diaphragm than on any comparable machine. By loosening three nuts and swinging back the counterbalanced frame the diaphragm is exposed for a 9 minute change.

It has an enclosed 1½ H. P. Stover engine. This engine has no oil or grease cups for it automatically oiled.



REX PUMPS.

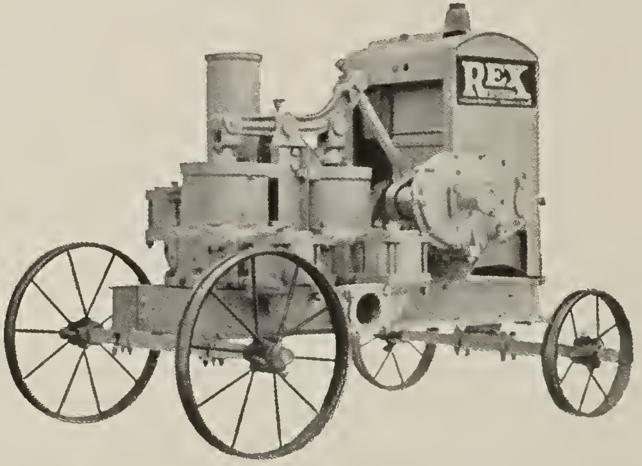


THE REX SELF PRIMING CENTRIFUGAL PUMP

The Rex self-priming centrifugal pump may be had in 3, 4 or 5 inch sizes. This pump is entirely automatic once the motor has been started. It picks up its own initial prime and automatically keeps water in the line. The capacities are practically the same as standard centrifugal pumps.

REX DOUBLE PLUNGER PUMP

Rex single and double plunger pumps are known for their dependability and high gallonages at low cost. Their features are oil sealed plungers, automatic packing lubrication, enclosed gears running in oil, accessible valves and portability.



WELL POINT SYSTEM.

Rex has developed a well point system for use with the plunger pumps. They are adaptable to any type of work. They save money for the contractor eliminating extensive sheeting, sumps, cave-ins and similar costs and nuisances.

DEMING VERTICAL "OIL-RITE" PISTON PUMPS.

WITH ENGINE DRIVE

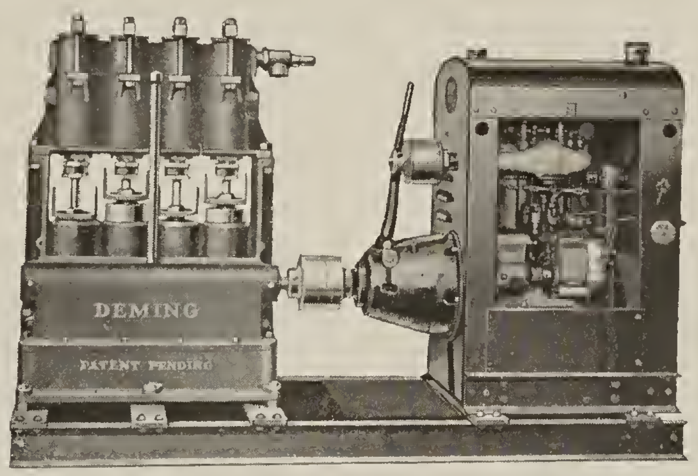


Figure 994, Type M

Fig. 994 is a "Quadruplex" four cylinder automatically oiled power pump for use where large capacities and high pressures are desired. The suction lift should not exceed 25 feet, nor the total head exceed the rated pressure in table below.

For a portable high pressure power pumping unit, the pump and Novo engine are mounted on a channel iron base and direct connected. The all metal flexible shaft coupling transfers the power direct from the engine and is not affected by weather conditions. Built-in clutch permits starting of the engine independently of the pump.

The 180 degree crank shaft practically eliminates vibration. These Novo engines are equipped with impulse starter, high tension magneto, Zenith carburetor and throttle governor.

The Fig. 994, 2¾ x 2½ inches, is furnished with a 9 to 12 H. P. engine and the Fig. 994, 3½ inch stroke, has a 35 H. P. engine. Novo engines are equipped with Timken Roller Bearings on both the crank-shaft and power take-off shaft which reduces friction and oil consumption to the minimum.

PUMP SPECIFICATIONS

Crank Case consists of a heavy casting which forms the base and oil reservoir. This case also provides the housing for the gears and eccentrics, thus affording maximum safety for the operator as well as excluding dirt and grit from the bearings and all moving parts.

Hyatt Roller Bearings at both ends of pinion shaft in the three larger sizes.

Main Gears and Eccentrics are cast integral and revolve on the stationary main shaft, thus providing maximum bearing surface which extends the full length of the pump.

Crossheads are of the full circle type, running in bored guides directly above the eccentrics. These crossheads prevent all lateral pressure or side thrust on the stuffing-boxes and pistons.

Stainless Steel Piston Rods insure longest wear under the most severe service.

Suction Chamber consists of a separate casting bolted to the rugged column and completely encloses the cylinders, protecting them from external injury.

Cylinders are of heavy gauge seamless brass or stainless steel tubing as ordered.

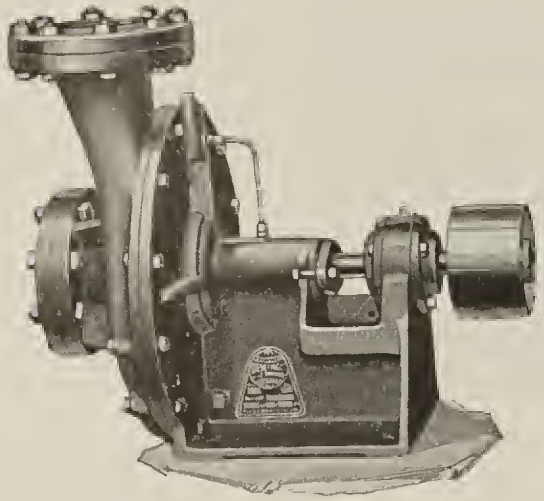
All Brass Pistons contain the suction valves and are fitted with special composition crimps for high pressure and long life.

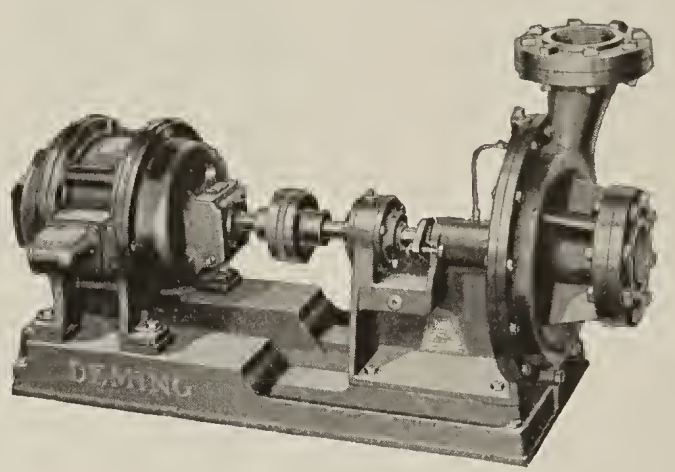
Suction and Discharge Valves are of brass or stainless steel as ordered. Coiled bronze springs over the valves insure quick closing and maximum efficiency. Easily accessible.

CYLINDER SIZE		CAPACITIES At 200 R.P.M. of Pistons		PIPE SIZES		
Diameter Inches	Stroke Inches	Gallons per Minute	Pressure Pounds	Suction Inches	Discharge Inches	Approx. Weight Pounds Pump Only
2¾	2½	30	500	2	2	950
3	3½	85	500	2½	2½	1860
3½	3½	115	350	2½	2½	1860
4	3½	150	250	2½	2½	1865

DEMING-MUELLER SIDE SUCTION CENTRIFUGAL PUMPS.

HIGH EFFICIENCY, BALL BEARING TYPE





Deming-Mueller Centrifugal Pumps are designed for economical operation and are ruggedly built throughout. The construction is very simple and there are no flimsy parts to require early replacements.

Every precaution has been taken, in fact, to make these pumps absolutely dependable, even though the service is continuous and severe. They are compact units, taking but a small amount of space.

These pumps not only handle water and other liquids but on account of having sufficient strength for 200 pounds working pressure they can be safely used as booster pumps.

Before shipment every pump is thoroughly tested for the capacity and pressure for which it is rated, and during the test the pump is carefully inspected and any necessary adjustments made.

The following are a few of the many features built into this line of Deming-Mueller Pumps.

(1) Deep groove ball bearings for radial and thrust loads, eliminating the troublesome, so-called thrust collars.

(2) Non-clogging, open type impeller (the 2-inch pump will pass ¾-inch spheres) with efficiencies far higher than most pumps with the enclosed type impeller.

(3) Filling and drainage openings are located on support head instead of casing, allowing larger openings especially on the smaller sized pumps.

(4) The inside bearing is a bronze bushing of the oil-less type, insuring long life.

(5) Motor-driven units are supplied with latest type of base plate. Center and side canals are located near the top instead of at the bottom of the base.

STANDARD SIZES, CAPACITIES, ETC.

Pump		Size	Normal Capacity in U. S. Gallons Per Minute				Normal Heads in ft. at				Size of	Weight, lb	
Fig. No.	Size	Suction and Dis. in.	1450 r. p. m.	1750 r. p. m.	2900 r. p. m.	3500 r. p. m.	1450 r. p. m.	1750 r. p. m.	2900 r. p. m.	3500 r. p. m.	Pulley, in.	Pulley Drive	Motor Drive
4010	1	1	20	25	30	40	18	25	80	120	4x2¼	67	150
	1½	1½	40	50	90	110	22	30	75	110	4x2¼	70	160
	2	2	60	75	130	160	22	30	85	125	4x2¼	72	180
4020	1½	1½	60	100	120	120	50	75	150	220	4x2¼	108	215
	2	2	120	130	160	180	45	70	190	240	4x2¼	112	230
	3	3	200	250	300	325	43	65	170	180	6x2¾	150	280
4030	2	2	150	190			65	90			6x3¾	160	290
	3	3	250	300			60	90			6x3¾	206	350
	4	4	375	450			60	90			6x3¾	234	390

Weight does not include motor and is approximate only depending on size of base plate.

Belt driven Units are not recommended to operate above 2000 r. p. m.

Sizes 1 in. to 2 in. inclusive have screened suction and discharge connections. 3 in. and above are flanged and we furnish companion flanges.

DEMING-MUELLER SIDE SUCTION CENTRIFUGAL PUMPS
Performance Table

Gallons Per Minute

Per Minute	Feet Head	10″ Head	20″ Head	30″ Head	40″ Head	50″ Head	″60 Head	70″ Head	80″ Head	90″ Head	100″ Head
10	Figure No.	4010	4010	4010	4010	4020					
	Size	1	1	1	1	1½					
	Efficiency %	25	30	30	28	15					
	Brake H. P.	.1	.17	.25	.36	.85					
	R. P. M.	1100	1400	1600	1850	1300					
20	Figure No.	4010	4010	4010	4010	4020	4020	4020			
	Size	1	1	1	1	1½	1½	1½			
	Efficiency %	33	40	41	39	25	23	20			
	Brake H. P.	.15	.25	.37	.52	1.0	1.3	1.8			
	R. P. M.	1300	1525	1750	2000	1300	1410	1525			
30	Figure No.	4010	4010	4010	4010	4020	4020	4020	4020	4020	
	Size	1½	1½	1½	1½	1½	1½	1½	1½	1½	
	Efficiency %	40	55	55	50	30	29	28	25	25	
	Brake H. P.	.19	.28	.41	.6	1.25	1.6	1.9	2.4	2.7	
	R. P. M.	1125	1350	1650	1900	1325	1425	1540	1640	1740	
40	Figure No.	4010	4010	4010	4010	4010	4020	4020	4020	4020	4020
	Size	1½	1½	1½	1½	2	1½	1½	1½	1½	1½
	Efficiency %	45	62	61	58	48	36	34	32	30	28
	Brake H. P.	.22	.33	.5	.7	1.1	1.7	2.1	2.5	3.0	3.6
	R. P. M.	1200	1400	1700	1925	2000	1450	1560	1660	1760	1840
50	Figure No.	4010	4010	4010	4010	4020	4020	4020	4020	4020	4020
	Size	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
	Efficiency %	45	60	62	61	43	42	40	38	36	34
	Brake H. P.	.28	.42	.6	.83	1.5	1.8	2.2	2.7	3.2	3.7
	R. P. M.	1300	1525	1775	2000	1360	1470	1580	1675	1775	1850
60	Figure No.	4010	4010	4010	4010	4020	4020	4020	4020	4020	4020
	Size	2	2	2	2	1½	1½	1½	1½	1½	1½
	Efficiency %	50	65	65	64	47	45	43	43	40	38
	Brake H. P.	.3	.47	.7	.95	1.6	2.0	2.5	2.8	3.4	4.0
	R. P. M.	1225	1400	1660	1900	1375	1490	1600	1700	1800	1900
70	Figure No.	4010	4010	4010	4010	4020	4020	4020	4020	4020	4020
	Size	2	2	2	2	1½	1½	1½	1½	1½	1½
	Efficiency %	48	65	67	66	49	48	47	46	45	43
	Brake H. P.	.37	.54	.79	1.1	1.8	2.2	2.6	3.1	3.5	4.1
	R. P. M.	1250	1460	1720	1925	1400	1525	1625	1725	1825	1925
80	Figure No.	4010	4010	4010	4010	4020	4020	4020	4020	4020	4020
	Size	2	2	2	2	1½	1½	1½	1½	1½	1½
	Efficiency %	45	60	67	67	51	50	49	48	47	45
	Brake H. P.	.45	.67	.9	1.2	2.0	2.4	2.9	3.4	3.9	4.5
	R. P. M.	1350	1550	1750	1975	1430	1550	1650	1750	1850	1975
90	Figure No.	4010	4010	4010	4010	4020	4020	4020	4020	4020	4030
	Size	2	2	2	2	1½	1½	1½	1½	1½	2
	Efficiency %	40	55	65	66	52	51	51	50	49	43
	Brake H. P.	.57	.82	1.1	1.4	2.2	2.7	3.1	3.6	4.2	5.3
	R. P. M.	1450	1625	1850	2000	1475	1575	1680	1780	1880	1670
100	Figure No.	4020	4020	4020	4020	4020	4020	4020	4020	4020	4020
	Size	2	2	2	2	2	2	2	2	2	2
	Efficiency %	50	58	60	68	59	57	55	53	51	47
	Brake H. P.	.5	.87	1.26	1.68	2.1	2.7	3.2	3.8	4.4	5.4
	R. P. M.	925	1025	1180	1310	1440	1560	1660	1775	1870	1970
125	Figure No.	4020	4020	4020	4020	4020	4020	4020	4020	4020	4020
	Size	3	3	3	3	3	3	3	3	3	3
	Efficiency %	65	68	70	65	61	56	52	48	45	39
	Brake H. P.	.49	.93	1.4	1.9	2.6	3.4	4.2	5.2	6.3	8.1
	R. P. M.	850	1000	1180	1325	1440	1550	1650	1730	1840	1920
150	Figure No.	4020	4020	4020	4020	4020	4020	4020	4020	4020	4020
	Size	3	3	3	3	3	3	3	3	3	3
	Efficiency %	66	70	70	69	65	61	56	52	48	43
	Brake H. P.	.57	1.1	1.6	2.2	2.9	3.7	4.7	5.8	7.1	8.8
	R. P. M.	875	1050	1225	1360	1470	1580	1675	1760	1870	1940
175	Figure No.	4020	4020	4020	4020	4020	4020	4020	4020	4020	4020
	Size	3	3	3	3	3	3	3	3	3	3
	Efficiency %	50	67	69	69	67	63	60	55	51	47
	Brake H. P.	.88	1.3	1.9	2.6	3.3	4.2	5.2	6.4	7.8	9.4
	R. P. M.	950	1100	1275	1400	1510	1610	1700	1800	1890	1975
200	Figure No.	4020	4020	4020	4020	4020	4020	4020	4020	4020	4020
	Size	3	3	3	3	3	3	3	3	3	3
	Efficiency %	45	60	66	67	67	65	61	56	53	48
	Brake H. P.	1.1	1.7	2.3	3.0	3.8	4.7	5.8	7.2	8.6	10.5
	R. P. M.	1050	1180	1325	1430	1540	1640	1730	1825	1920	2000
250	Figure No.	4020	4020	4020	4020	4020	4020	4020	4020	4020	4030
	Size	3	3	3	3	3	3	3	3	3	3
	Efficiency %	35	45	55	60	62	62	61	58	52	61
	Brake H. P.	1.8	2.8	3.4	4.2	5.1	6.1	7.3	8.7	10.9	10.3
	R. P. M.	1300	1360	1430	1520	1620	1710	1800	1900	2000	1760
300	Figure No.	4030	4030	4030	4030	4030	4030	4030	4030	4030	4030
	Size	4	4	4	4	4	4	4	3	3	3
	Efficiency %	42	52	60	69	72	70	67	63	63	62
	Brake H. P.	1.8	2.9	3.8	4.4	5.3	6.5	7.7	9.6	10.8	12.2
	R. P. M.	875	1000	1090	1180	1290	1375	1470	1690	1760	1840
350	Figure No.	4030	4030	4030	4030	4030	4030	4030	4030	4030	4030
	Size	4	4	4	4	4	4	4	4	4	4
	Efficiency %	40	45	60	65	69	69	68	66	65	63
	Brake H. P.	2.2	3.9	4.4	5.4	6.4	8.7	9.1	10.7	12.2	14.0
	R. P. M.	1060	1100	1160	1250	1350	1430	1520	1590	1660	1730
400	Figure No.	....	4030	4030	4030	4030	4030	4030	4030	4030	4030
	Size	....	4	4	4	4	4	4	4	4	4
	Efficiency %	....	45	55	62	66	68	68	66	65	64
	Brake H. P.	....	4.5	5.5	6.5	7.7	8.9	10.4	12.2	14.0	15.7
	R. P. M.	....	1200	1240	1320	1410	1490	1570	1650	1720	1790
450	Figure No.	....	....	4030	4030	4030	4030	4030	4030	4030	4030
	Size	....	....	4	4	4	4	4	4	4	4
	Efficiency %	....	....	50	58	63	65	66	65	65	63
	Brake H. P.	....	....	6.8	7.8	9.0	10.4	12.0	13.9	15.7	18.0
	R. P. M.	....	....	1325	1400	1470	1550	1625	1700	1760	1825
500	Figure No.	....	....	....	....	4030	4030	4030	4030	4030	4030
	Size	....	....	....	....	4	4	4	4	4	4
	Efficiency %	....	....	....	....	58	61	63	68	63	62
	Brake H. P.	....	....	....	....	10.9	12.4	14.0	15.7	18.0	20.3
	R. P. M.	....	....	....	....	1850	1625	1700	1750	1810	1880

GOULDS AUTOMATIC OILING "PYRAMID" PUMP

For Electric Motor or Engine Drive

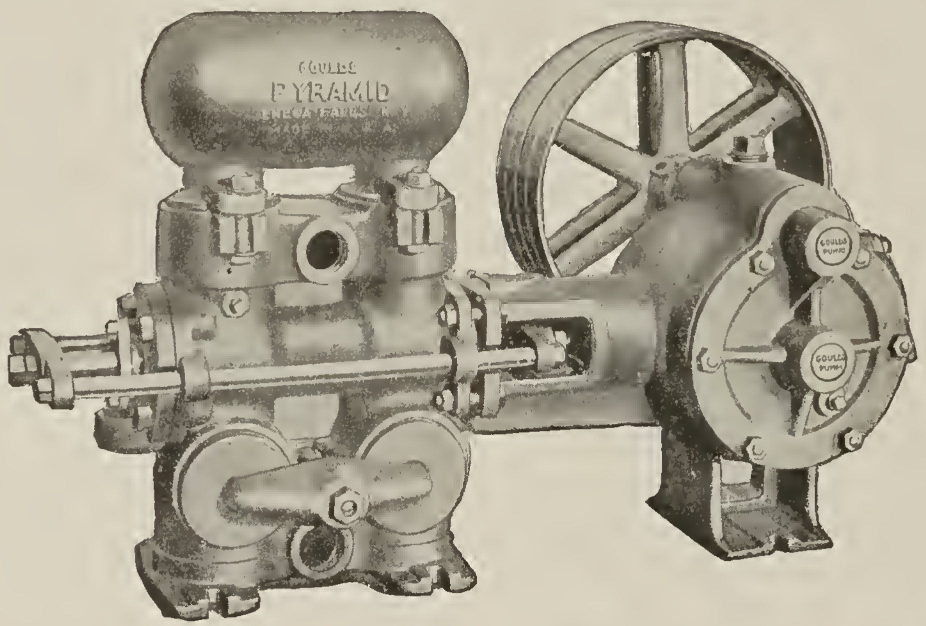


Figure 1741

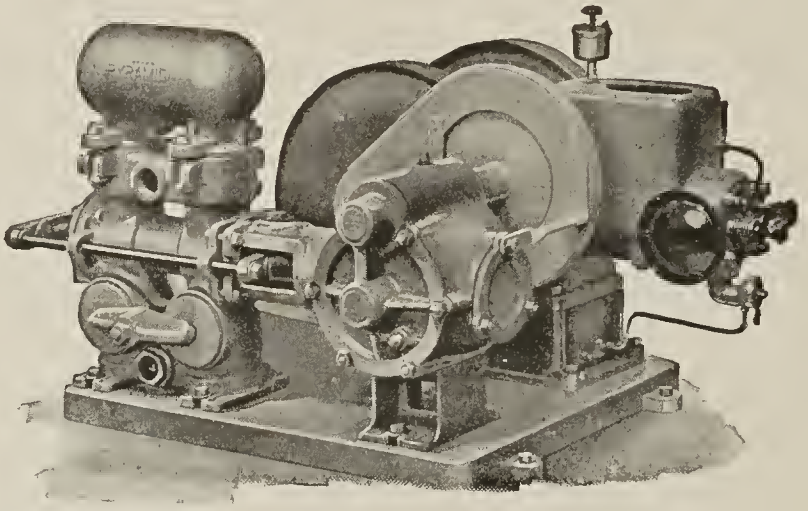


Fig. 1741. The automatic-oiling feature of this pump makes it especially suitable for contractors use. Only an occasional inspection required.

Oils Itself

Oil is fed automatically to gears and bearings from the supply in the crankcase.

No Crankcase Dilution

Impossible for gland leakage to enter crankcase, as gland is at opposite end of pump.

Construction:

Piston: Cup leather packed.

Gearing: Machine cut from solid.

Valves: Rubber disc type on bronze grid seats. Cylindrically wound springs. Valve seats, studs, springs and plates are bronze. Valves easily removable.

Air Attachment: Where pump is for use with a pneumatic water supply system, we furnish a Fig. 1692 Air Attachment.

Cylinder: Brass lined:

Stuffing Box Gland: Bronze, bolted type, stuffing box extra deep.

Piston Rod: Brass cased.

Fig. 1741

Piston Inches		Displacement per Revolution Crankshaft Gallons	Maximum Speed and Displacement per Minute		Working Pressure Pounds	For Elevation to Feet	H. P. at Catalog Rating	Pipe Sizes Inches		Geared	Tight and Loose Pulleys Inches	Weight Pounds
Diam.	Stroke		Revs.	Gals.				Suction	Discharge			
2	2	.0517	250	12.94	100	225	1	1¼	1¼	3 to 1	12x2½	150
2⅛	2¾	.0773	150	11.59	300	693	3	1¼	1¼	3 to 1	15x2½	380
2⅜	2¾	.0983	150	14.73	350	809	5	1¼	1¼	4 to 1	15x4	390
2⅞	4	.2144	150	32.16	350	809	7½	2	2	3 to 1	16x4	560
3	2¾	.163	150	24.40	100	225	2	1½	1½	3 to 1	15x2½	365
4	2¾	.291	150	43.70	75	175	5	2	2	3 to 1	15x2½	425
5	4	.659	125	82.38	100	225	7½	2½	2½	3 to 1	16x4	800

GOULDS "PYRAMID" DOUBLE-ACTING POWER PUMP

Figure 1531
For Capacities of 6 to 114 G.P.M. and Heads up to 175 Feet or Pressures up to 75 Pounds.

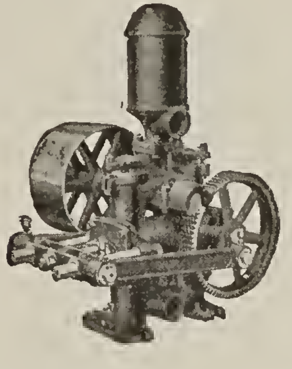


Fig. 1531. This pump is especially adapted to meet the requirements of a medium priced, compact power pump, to be operated by direct-connected electric motor, gasoline engine or by belt drive.

Construction

Brass-Lined Cylinder. Brass Cased Piston Rod. Bronze gland and follower. The valves are easily accessible through hand holes, the covers for which can be removed by backing off one nut. Gearing machine cut. Suction at both sides of pump. Discharge can be turned four ways: All sizes geared 5 to 1 except 6x12 which is geared 6 to 1.

The "Pyramid" Pump is described more completely in a separate publication, Bulletin 100. Copy will be sent on request.

Dimensions, Speeds, Displacements, Goulds "Pyramid" Pumps Regular Construction

Fig. 1531

Ratings Based on Pumping Cold Water

Pistons		Displacement Per Rev. Shaft Gal.	Usual Speed and Disp. per Minute		For Elevation to Ft.	H. P. at Catalog Rating	Size Pipe		Tight and Loose Pulleys Inches	Weight Lbs.
Diam. Inches	Stroke Inches		Rev.	Gals.			Sct'n Inches	Disch. Inches		
2½	4	.162	38	6	175	.50	1¼	1¼	8x2½	160
3	5	.293	41	12	175	1.00	1½	1½	15x2½	280
4	5	.531	40	21	175	1.50	2	2	15x3	325
5	5	.823	40	33	175	3.00	2½	2½	16x4	500
6	6	1.440	40	57	175	5.00	3	3	20x4	645
6	12	2.870	40	114	175	7.50	4	4	26x4	875

For Geared Drive from Engines or Electric Motors

We furnish this pump with bedplate and gearing for connection to electric motors.

Also with bedplate and gearing for connection to any of the following gasoline engines:

ALAMO	LAUSON
FAIRBANKS-MORSE	NOVO
FULLER-JOHNSON	STOVER
HERCULES	WITTE

I. H. C. and others

GOULDS POWER DIAPHRAGM PUMP

For Gasoline Engine Drive

For Construction Work or other pumping services requiring a portable outfit, this pump makes an excellent unit when mounted with a small gasoline engine on either a frame or truck. Suitable for duplex mounting. We furnish the pump only and do not furnish the carrying truck or engine but can supply blue prints to show how frame should be built.

Suction connection will fit either hose or iron pipe.

Diaphragm: Best quality of rubber, guaranteed to stand hard service. Diaphragm can be replaced by removing only four nuts and lifting off top section. Nuts are brass to prevent rusting to the bolts.

Valves: Metal, rubber faced, easily removable. The side suction with suction valve resting on an inclined seat offers least resistance to passage of semi-liquids.

Two Constructions:

Fig. 1739—For belt drive. Fitted with 12″ x 3″ single pulley.

Fig. 1740—For Gear Connection to Engine. Supplied with a second reduction of gearing, consisting of engine gear and pinion, with any one of several different ratios to give over-all reductions from the engine to the pump as shown in the table below. **(Any make of engine can be used.)**

Note: When ordering for gear connection to engine always specify size of engine shaft to be used so that the pinion can be bored.

Engine: 1½ H. P. Engine is recommended for both sizes of this pump.

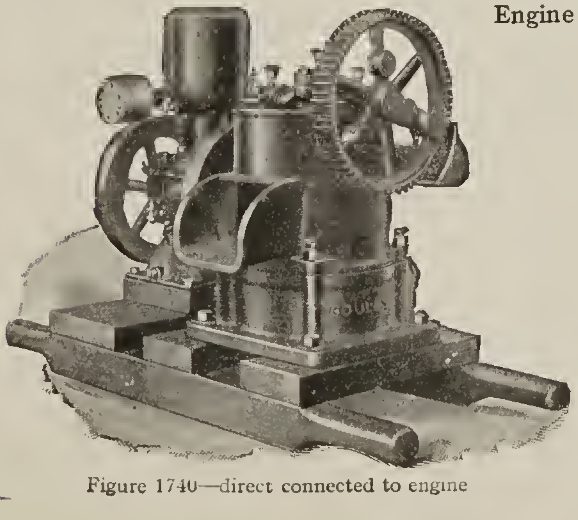


Figure 1740—direct connected to engine

Figs. 1739 and 1740

No.	Stroke Inches	Suc. Pipe Inches	Displacement per Rev. Gals.	No. of Revolutions Recommended	Gear Ratio Pump only	Approx. Wgt. in lbs.	Overall Ratios of Gearing Fig. 1740 No. 3 & No. 4	Max. Bore of Eng. Pinion Inches
							10.0 to 1	1½
							10.0 to 1	2
							6.1 to 1	1¾
							7.3 to 1	1½
							8.3 to 1	1¾
3	2¼	3	.8	35 to 50	5 to 1	210	11.1 to 1	1¾
4	3¼	4	1.2	35 to 50	5 to 1	320	13.3 to 1	1½
							14.0 to 1	1¾
							16.6 to 1	1½
							18.0 to 1	1¾
							21.6 to 1	1½

GOULDS DIAPHRAGM SUCTION PUMPS, HAND OPERATION

Fig. 1223-With Side Suction. Fig. 1222-With Bottom Suction.

These pumps are unexcelled for rough and ready service such as required in pumping out excavations, trenches, sewers and quarries. Also for bilge pumping on vessels, barges and dredges.

SPECIFICATIONS

Diaphragm: Best quality of rubber guaranteed to stand long service.

Suction Valve: Metal, rubber faced and easily removable. It rests on an inclined seat and therefore offers the least obstruction to the passage of semi-fluid or solid matter. The waterways are large and permit an easy flow of fluid.

Lever: Wrought iron and reversible; it can be used vertically or horizontally from either side or the back of the pump.

Both of these pumps can be operated by gasoline engine by using our Fig. 1589 jack connected up to the 4-inch stroke.

Figs. 1222 and 1223

No.	Stroke Inches	Suction		Approximate Capacity per Hour Gallons	Approximate Weight in Pounds	
		Fig. 1222	Fig. 1223		Fig. 1222	Fig. 1223
2	3	2½" Iron Pipe	2½" Iron Pipe or Hose	1800	115	127
3	3	3 " Iron Pipe	3 " Iron Pipe or Hose	3500	170	178
4	4	4 " Iron Pipe	4 " Iron Pipe or Hose	6000	256	266

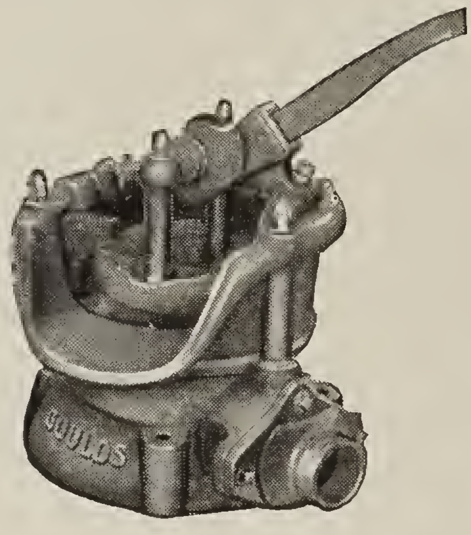


Figure 1223

GOULDS FIG. 1687 DIAPHRAGM LIFT AND FORCE PUMP

Lift and Force 30 Feet

For pumping out excavations, cellars, trenches, quarries or for similar services where large quantities of muddy and gritty water, sewage or semi-fluids are to be handled.

It has a decided advantage over the ordinary diaphragm pump, in that it can be placed in the trench or excavation and the water or sewage forced to the top.

Diaphragm: Best quality of rubber guaranteed to stand hard service. 12" diameter.

Valves: Metal, rubber-faced and easily removable. The waterways are large and permit an easy flow of liquid.

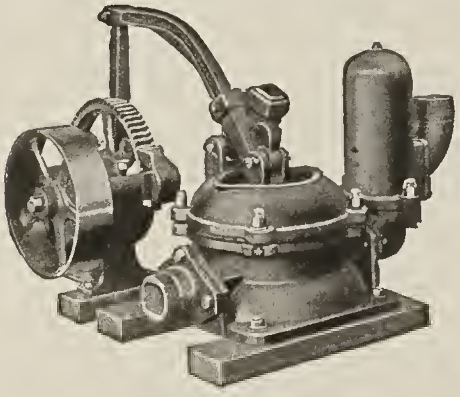


Figure 1687
With Jack for Engine Operation

Lever: Wrought iron and reversible. Double lever socket makes it possible to operate the pump vertically or horizontally or from either side with one or two levers.

Discharge Elbow: Designed so that it can be bolted on with the discharge pointing in any one of four different positions.

For services where a portable power pump is required, this pump makes an excellent outfit mounted on a frame and connected to the 4-inch stroke of our Fig. 1589 Jack.

Fig. 1687

No.	Stroke Inches	Capacity		Suction and Discharge Pipe or Hose, Inches	Discharge Head Ft.	Total Lift and Force, Ft.	Weight Lbs.
		Per Stroke Gals.	Per Hour Gals.				
3	3	.8	2400	3	15	30	198

GOULDS ODORLESS DIAPHRAGM FORCE PUMP

Lift and Force 30 Feet

Built especially for pumping out sewers, cesspools, vaults and for handling any disagreeable fluid or semi-fluid in a sanitary manner.

Diaphragm: Best quality of rubber with special valve acting as a plunger.

Suction Valve: Rubber-faced, offering the least obstruction to the passage of matter.

Hand Hole: Conveniently located for getting at interior without removing air chamber.

Levers: Wrought iron and reversible. The stroke is short and the pump operates easily.

By means of our Fig. 1589 jack connected up to the 4-inch stroke, this pump can be adapted for power drive

Fig. 1738

Diameter Diaphragm	Stroke	Capacity per Stroke	Suction	Discharge	Lift and Force Feet	Approx. Wt. in Lbs.
13 in.	3 in.	1.72 gals.	3 in. pipe	3 in. pipe	30	257

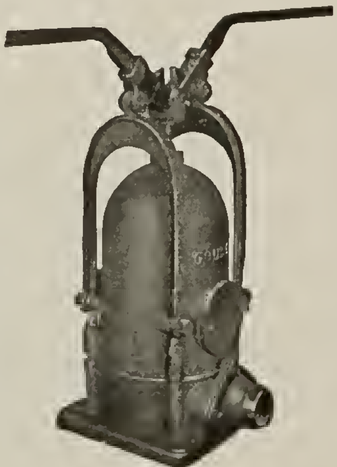


Figure 1738

GOULDS CENTRIFUGAL PUMP

With Single Tight Pulley for Belt Drive

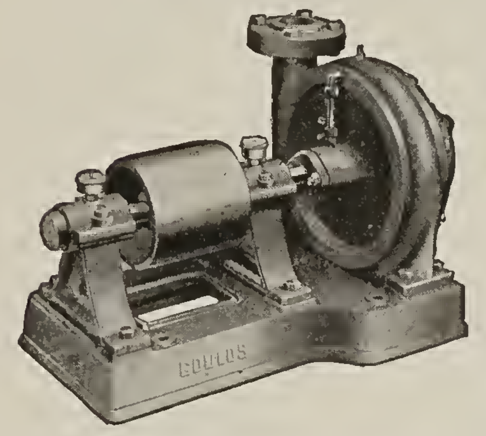


Fig. 3010 — A well-built but inexpensive pump for all-round pumping services. Especially suited for the following applications:

FOR ROAD AND BUILDING CONTRACTORS in draining excavations, cellars, ditches, trenches, etc., and for general water supply.

FOR DRAINING QUARRIES AND MINES: Will handle water containing a limited amount of sand and mud.

FOR SEWAGE PUMPING: The large open water passages make this pump especially adapted for handling screened sewage.

Pump Size Inches	Pipe Sizes Fig. 3010 Dis. Ins.	Pipe Sizes Fig. 3010 Suc. Ins.	Nominal Capacity in Gals. per Min.	Diameter and Face Pulley in Inches	Floor Space Required Inches	Domestic Shipping Wt., lbs.
*1	1	1	15	3x2½	10¾x7⅜	25
*1½	1½	1½	30	4x3	11¼x9½	35
*2	2	2	70	5x5	19¼x12¾	100
3S	3	3	120	6x6	22¼x16	200
3L	3	3	200	6x7	24¾x19	265
4	4	4	270	7x7	26½x22	375
5	5	5	470	10x10	33¼x29¼	650
6	6	6	750	12x12	37¾x33	850
8	8	8	1050	14x14	42¾x37¼	1200

*Fitted with screwed connections, others with companion flanges.

GOULDS TRIPLEX PUMPS

With Tight and Loose Pulleys for Belt Drive

Built in a variety of sizes for capacities from 3 to 400 gallons per minute. Pressures up to 150 pounds.

A substantially built pump which will give years of satisfactory trouble free service. Built to stand the severest service, this pump is recommended for construction work of all kinds, particularly where water must be pumped against high pressures or through long pipe lines.

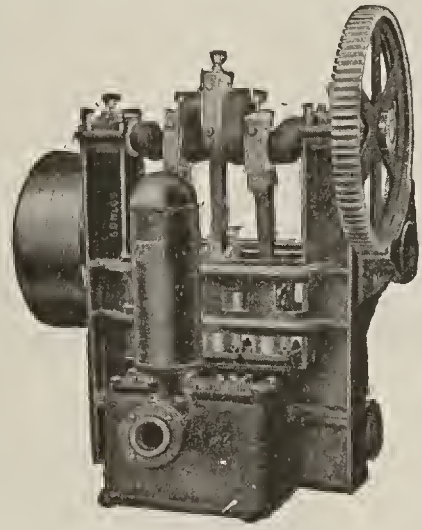


Fig. 1696

RATINGS AT 150 LBS. PRESSURE

Gallons Displacement per Minute	Plungers Inches Diam.	Plungers Inches Stroke	Displacement per Revolution Crankshaft Gallons	Revs. per Minute	Horsepower at Catalog Rating	Pipe Sizes Inches Suction and Discharge	Tight and Loose Pulleys Inches
3	1¼	2	0.031	97	.53	¾	12x1½
6	2	3	0.122	50	.96	1¼	12x2½
9	2	3	0.122	75	1.33	1¼	12x2½
12	2½	4	0.255	48	1.71	1½	15x3
18	3	4	0.367	50	2.29	1½	15x3
25	2½	4	0.255	98	3.15	1½	15x3
35	3½	4	0.501	70	4.00	2	15x3
50	4	6	0.978	52	5.65	2	20x3
75	4	6	0.978	77	8.26	2	20x3
100	5	8	2.041	50	10.60	3	30x5
125	6	8	2.938	43	13.20	4	30x6
150	6	8	2.938	52	15.80	4	30x6
200	7	8	4.000	50	21.30	4	36x6
300	7	10	5.000	60	31.30	5	36x6
400	8	10	6.520	62	41.50	5	42x6

GOULDS ENGINE CENTRIFUGAL PUMP UNIT

Two Sizes: Capacities 5 to 100 G. P. M. Heads up to 40 Feet

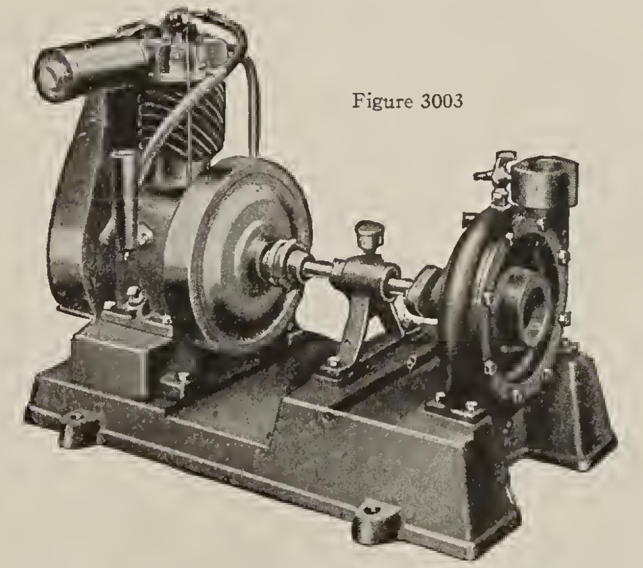


Figure 3003

Fig. 3003

Fig. 3003. A high grade engine driven pumping unit widely used by contractors. Furnished as a complete unit consisting of pump, engine, flexible coupling and bed-plate completely assembled as illustrated.

Engine is 4-cycle, air-cooled. A high tension magneto is built into one fly wheel and is connected directly to the spark plug. A cooling fan is built into the other fly wheel. The hollow engine base serves as a gasoline tank.

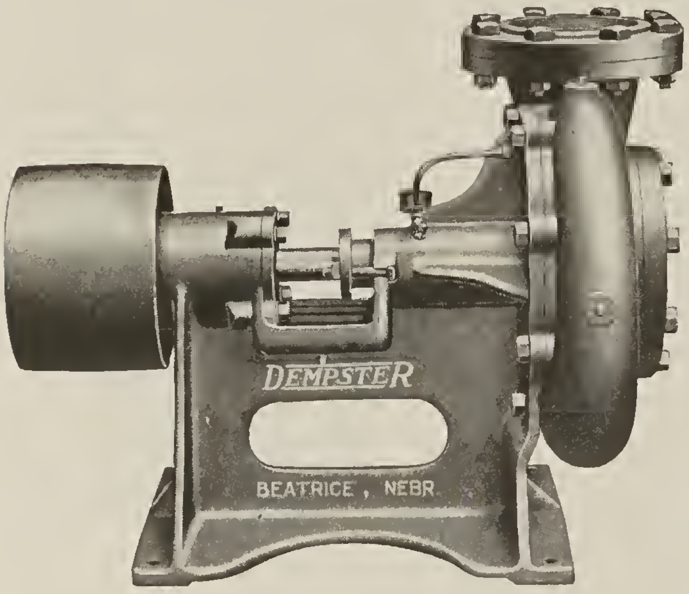
Engine is supplied with either foot-starter or rope starter.

Pump No.	PIPE SIZES Dis. Ins.	PIPE SIZES Suc. Ins.	Domestic Shipping Weight, lbs.
1	1½	1½	125
1½	2	2	305

CAPACITIES

Pump No.		TOTAL HEAD IN FEET 40	35	30	25	20
1	G.P.M.			5	20	40
1½	G.P.M.	50	75	100		

HORIZONTAL BELT DRIVEN CENTRIFUGAL PUMPS.



The Dempster Figure 1905

Made in ¾, 1, 1½, 2, 3, 4, 5 and 6-inch sizes. The shaft, of Stainless Steel, is carried by two Timken Roller Bearings.

All the sizes of Dempster Fig 1905 pumps are built with a **one-piece frame.** This type of construction assures perfect alignment as well as rigidity. It is one of the reasons why Dempster pumps run for years with practically no up-keep cost.

Costly shut-downs while awaiting repairs are unknown where Dempster Pumps are installed.

The shaft on all sizes of these pumps is made of stainless steel, which is machined and ground to a mirror-like finish. This shaft will never rust or cause packing trouble.

Two sets of heavy **Timken Bearings** are regular equipment on all sizes of Dempster centrifugal pumps. These bearings take care of both the belt pull and the end thrust of the shaft.

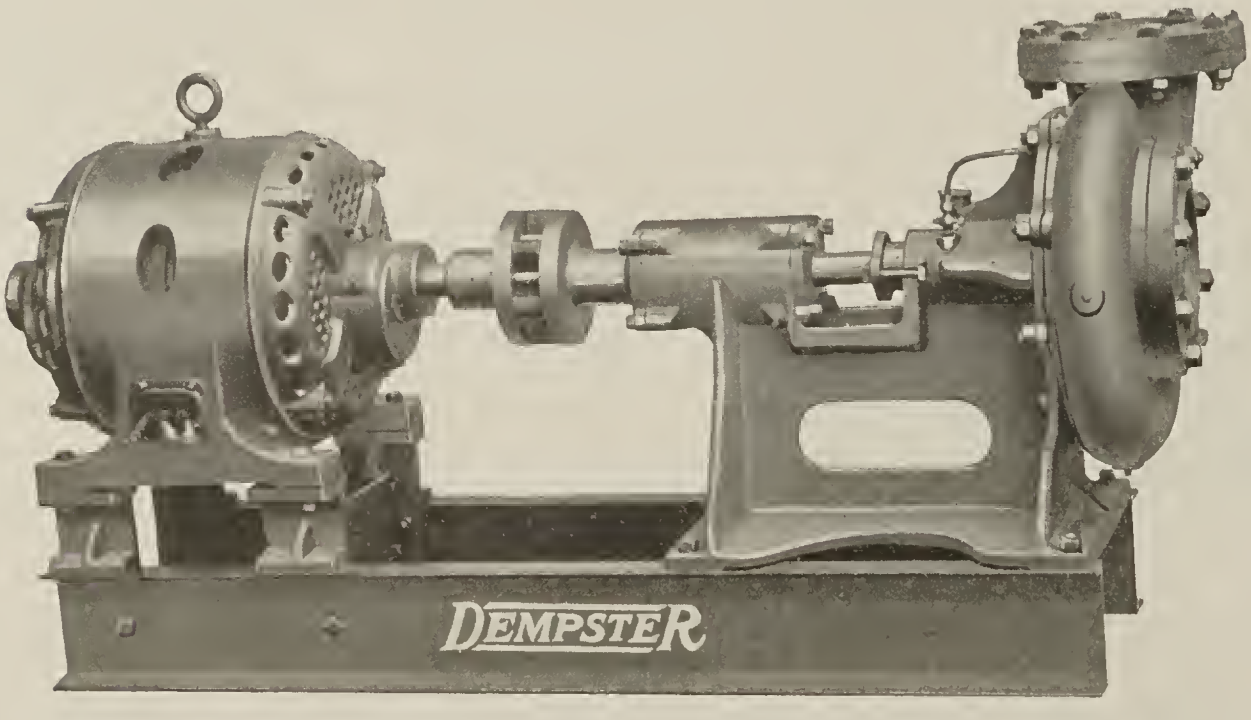
The Timken Bearings are in a **dust-proof, oil-tight housing,** which increases their life. They run in a bath of oil with a minimum of friction.

The Dempster Centrifugal Pumps are all built with semi-enclosed impellers. Past experience, as well as the best engineering practice, has proved this to be the best type of impeller for irrigation purposes. This semi-enclosed impeller is more efficient than the open impeller and is much better than the closed impeller bcause it will not clog.

Each of the rotating parts is balanced separately. After they are assembled, all are balanced together. As a result, high speeds with this pump cause no vibration. Every part is tested and inspected.

DIRECT-CONNECTED CENTRIFUGAL PUMP

FIG. 1905



This pictures the Dempster Direct-Connected Centrifugal Pump. Built in 1½, 2, 3, 4, 5, and 6-inch size All sizes are equipped with Timken Bearings, flexible couplings and are mounted complete on channel base.

HORIZONTAL CENTRIFUGAL PUMPS

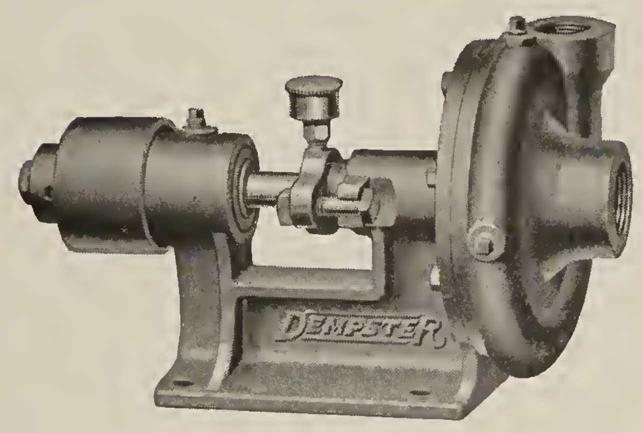
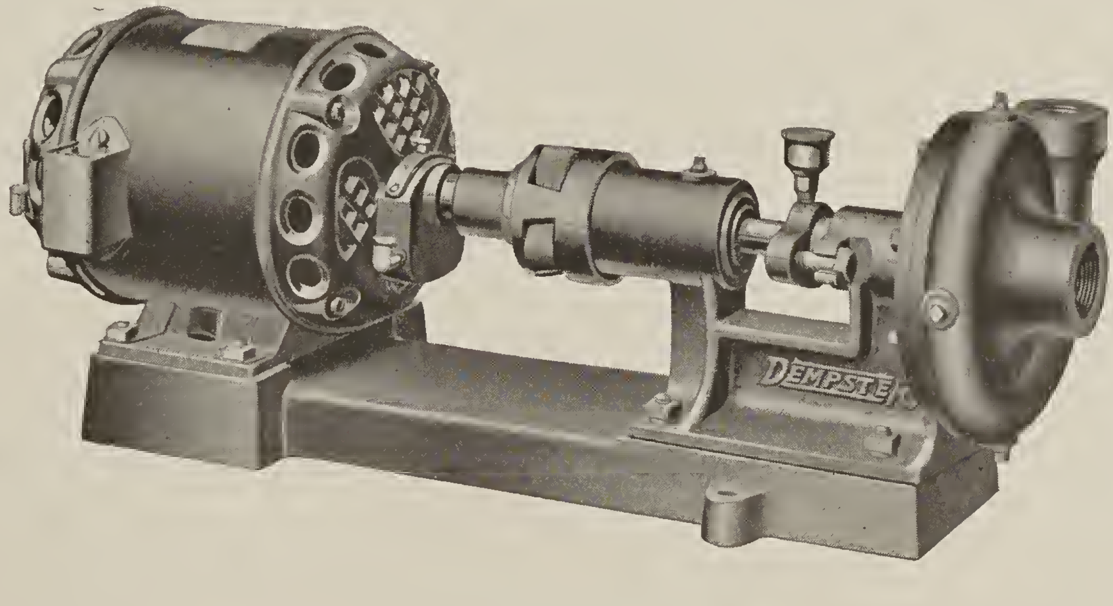


Fig. 1905

The above illustration is of the ¾ and 1-inch Dempster Centrifugal Pumps. These are equipped with two tapered Timken Bearings and pulley for belt drive.

PERFORMANCE OF ¾″ AND 1″ FIG. 1905 PUMPS

	10′	20′	30′	40′
G.P.M. 10				
Size Pump	¾	¾	¾	¾
R. P. M.	1280	1700	2060	2320
B. H. P.	.09	.18	.3	.4
Eff.	30	28	25	25
G.P.M. 20				
Size Pump	1	¾	¾	¾
R. P. M.	1280	1890	2190	2440
B. H. P.	.15	.32	.5	.67
Eff.	34	32	30	30
G.P.M. 30				
Size Pump	1	1	1	1
R. P. M.	1340	1760	2110	2380
B. H. P.	.19	.39	.67	.95
Eff.	39	39	34	32
G.P.M. 40				
Size Pump	1	1	1	1
R. P. M.	1490	1890	2190	2440
B. H. P.	.27	.55	.85	1.15
Eff.	37	37	36	35
G.P.M. 50				
Size Pump	1	1	1	1
R. P. M.	1580	1960	2260	2500
B. H. P.	.37	.68	1.02	1.37
Eff.	34	36	37	37



Timken-Bearing Equipped Centrifugal Pump
Size ¾″ —and 1″—Fig. 1905, Direct Connected

This illustrates the Dempster ¾ and 1-inch, Direct-Connected Side Suction Centrifugal Pump, with 1750 R. P. M. Repulsion-Induction, Single Phase Motor, for operation of 110-volt, 220-volt, 60 cycle current.

BELT DRIVEN

	Weight
¾-inch	25 lbs.
1-inch	30 lbs.

MOTOR DRIVEN

	Weight
¾-inch	90 lbs.
1-inch	95 lbs.

BELT DRIVEN

Performance Table of Dempster Centrifugal Pumps

Figure 1905 HORIZONTAL TYPE with Timken Bearings

Cap'y G. P. M.		10′ Head	20′ Head	30′ Head	40′ Head	50′ Head	60′ Head	70′ Head	80′ Head	90′ Head	100′ Head
30	Size Pump	1½	1½	1½	1½	1½	1½	1½	1½	....	....
	R. P. M.	600	850	1030	1172	1310	1425	1530	1645	....	....
	Brake H. P.	.29	.52	.78	1.04	1.22	1.46	1.96	2.25	....	....
	Efficiency	26	29	29	29	31	31	27	27	....	....
40	Size Pump	2	1½	2	1½	1½	1½	1½	1½	1½	....
	R. P. M.	530	870	1005	1180	1320	1432	1540	1650	1750	....
	Brake H. P.	.32	.58	.72	1.14	1.36	1.64	2.14	2.45	3.36	....
	Efficiency	32	34½	42	35½	37	37	33	33	27	....
50	Size Pump	2	2	1½	1½	1½	1½	1½	1½	1½	1½
	R. P. M.	550	855	1055	1190	1325	1440	1550	1655	1760	1850
	Brake H. P.	.35	.60	.86	1.23	1.50	1.80	2.30	2.62	3.55	4.20
	Efficiency	36	42	44	41	42	42	38½	38½	32	30
75	Size Pump	2	2	2	2	1½	1½	1½	1½	1½	1½
	R. P. M.	600	890	1060	1205	1350	1470	1575	1680	1780	1870
	Brake H. P.	.50	.81	1.14	1.61	2.08	2.50	2.91	3.33	4.15	4.75
	Efficiency	38	47	50	47	45½	45½	45½	45½	41	40
100	Size Pump	3	3	2	2	2	2	2	1½	1½	1½
	R. P. M.	580	772	1100	1240	1380	1490	1590	1730	1820	1900
	Brake H. P.	.56	1.03	1.49	1.90	2.58	3.16	3.60	4.20	4.84	5.37
	Efficiency	45	49	51	53	49	48	49	48	47	47
125	Size Pump	3	3	3	3	3	2	2	2	2	2
	R. P. M.	590	785	950	1095	1225	1530	1630	1750	1880	2015
	Brake H. P.	.63	1.17	1.72	2.26	2.87	3.64	4.25	4.95	5.68	6.57
	Efficiency	50	54	55	55	55	52	52	51	50	48
150	Size Pump	3	3	3	3	3	3	3	2	2	2
	R. P. M.	600	800	960	1100	1230	1335	1437	1805	1930	2060
	Brake H. P.	.69	1.33	1.90	2.52	3.16	3.92	4.82	5.72	6.43	7.30
	Efficiency	55	57	60	60	60	58	55	53	53	52
175	Size Pump	3	3	3	3	3	3	3	3	2	2
	R. P. M.	630	820	970	1110	1240	1340	1445	1535	1985	2115
	Brake H. P.	.76	1.52	2.14	2.81	3.51	4.42	5.43	6.43	7.50	8.50
	Efficiency	58	58	62	63	63	60	57	55	53	52
200	Size Pump	4	4	4	3	3	3	3	3	3	2
	R. P. M.	680	820	990	1125	1250	1350	1455	1550	1640	2175
	Brake H. P.	.72	1.44	2.26	3.14	3.92	4.85	5.75	6.73	7.85	9.72
	Efficiency	70	70	67	65	65	63	62	60	58	52
250	Size Pump	4	4	4	3	3	3	3	3	3	3
	R. P. M.	710	850	1020	1165	1280	1385	1480	1580	1655	1745
	Brake H. P.	.87	1.73	2.66	3.82	4.70	5.65	6.70	7.65	8.74	9.85
	Efficiency	72	73	71	66	67	67	66	66	65	64
300	Size Pump	4	4	4	4	3	3	3	3	3	3
	R. P. M.	735	880	1060	1210	1325	1420	1510	1600	1685	1765
	Brake H. P.	1.01	2.04	3.24	4.65	5.73	6.68	7.80	8.80	9.90	11.10
	Efficiency	75	74	70	65	66	68	68	69	69	68
350	Size Pump	4	4	4	4	4	3	3	3	3	3
	R. P. M.	785	925	1110	1240	1345	1460	1555	1645	1725	1790
	Brake H. P.	1.16	2.35	3.80	5.27	6.60	7.92	8.97	10.25	11.35	12.63
	Efficiency	76	75	70	67	67	67	69	69	70	70
400	Size Pump	4	4	5	5	4	4	3	3	3	3
	R. P. M.	830	975	810	915	1375	1470	1625	1700	1765	1820
	Brake H. P.	1.36	2.88	4.27	5.68	7.20	9.03	10.40	11.70	13.00	14.45
	Efficiency	74	70	71	71	70	68	68	69	70	70
450	Size Pump	5	5	5	5	4	4	4	4	4	4
	R. P. M.	550	690	820	925	1410	1515	1620	1700	1770	1825
	Brake H. P.	1.70	3.39	4.80	6.40	8.00	9.73	11.70	13.53	15.25	16.80
	Efficiency	67	67	71	71	71	70	68	67	67	67
500	Size Pump	5	5	5	5	5	5	4	4	4	4
	R. P. M.	565	700	825	933	1030	1115	1655	1725	1790	1845
	Brake H. P.	1.86	3.66	5.27	7.03	8.89	10.80	12.60	14.40	16.20	18.30
	Efficiency	68	69	72	72	71	70	70	70	70	69
600	Size Pump	5	5	5	5	5	5	5	5	5	5
	R. P. M.	600	730	855	960	1050	1135	1215	1290	1360	1430
	Brake H. P.	2.20	4.33	6.32	8.30	10.40	12.50	14.70	17.10	19.75	22.30
	Efficiency	69	70	72	73	73	73	72	71	69	68
700	Size Pump	6	6	6	5	5	5	5	5	5	5
	R. P. M.	590	735	860	995	1085	1160	1240	1310	1380	1450
	Brake H. P.	2.60	5.06	7.48	9.70	12.10	14.30	17.00	19.40	21.80	24.50
	Efficiency	68	72	71	73	73	74	73	73	73	72
800	Size Pump	6	6	6	5	5	5	5	5	5	5
	R. P. M.	620	760	880	1015	1100	1185	1265	1340	1415	1485
	Brake H. P.	3.11	5.95	8.55	11.20	13.90	16.40	19.20	21.60	24.30	27.40
	Efficiency	65	68	71	72	73	74	74	75	75	74
900	Size Pump	6	6	6	6	6	5	5	5	5	5
	R. P. M.	665	790	905	1005	1100	1215	1290	1365	1440	1510
	Brake H. P.	3.78	6.90	9.50	12.50	15.60	18.40	21.50	24.20	26.90	30.30
	Efficiency	60	66	72	73	73	74	74	75	76	75
1000	Size Pump	6	6	6	6	6	6	6	5	5	5
	R. P. M.	710	820	925	1020	1112	1200	1280	1385	1450	1525
	Brake H. P.	4.60	8.42	10.50	13.90	16.70	20.20	23.60	26.90	29.90	33.20
	Efficiency	55	60	72	73	76	75	75	75	76	76
1100	Size Pump	....	....	6	6	6	6	6	6	6	6
	R. P. M.	....	....	942	1040	1130	1215	1295	1370	1440	1510
	Brake H. P.	....	....	11.90	15.40	18.25	21.90	25.60	29.20	33.30	37.10
	Efficiency	....	....	70	72	76	76	76	76	75	75
1200	Size Pump	....	....	6	6	6	6	6	6	6	6
	R. P. M.	....	....	960	1060	1150	1230	1310	1380	1450	1520
	Brake H. P.	....	....	14.00	17.80	20.00	23.90	28.60	33.20	37.40	41.50
	Efficiency	....	....	65	68	76	76	74	73	73	73

PERFORMANCE OF DIRECT—CONNECTED CENTRIFUGAL PUMPS

Fig. 1905 Horizontal Type

HEAD IN FEET

Gal. per Min.	10′	15′	20′	25′	30′	35′	40′	45′	50′	55′	60′	65′	70′	75′	80′	85′	90′	95′	100′
Size	1½–6⅜	1½–7¾	1½–9	1½–7¼	1½–7⅞	1½–8⅝	1½–6	1½–6⅜	1½–6⅝	1½–7	1½–7¼	1½–7½	1½–7⅞	1½–8⅛	1½–8⅜	1½–8¾	1½–9	……	……
30 R.P.M.	850	850	850	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	……	……
H.P.	⅛	½	¾	1	1	1½	1½	1½	2	2	2	3	3	3	3	3	5	……	……
Eff.	33	31	29	25	26	25	25	25	25	25	25	24	23	23	23	23	23	……	……
Size	2–7	2–8	2–9	1½–7⅜	1½–8	1½–8¾	1½–6	1½–6⅜	1½–6¾	1½–7	1½–7¼	1½–7⅝	1½–7⅞	1½–8⅛	1½–8⅜	1½–8¾	1½–9	……	……
50 R.P.M.	850	850	850	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	……	……
H.P.	½	¾	¾	1	1½	1½	1½	2	2	2	3	3	3	3	3	5	5	……	……
Eff.	33	38	39	36	38	37	36	36	36	37	36	35	35	35	35	34	33	……	……
Size	2–7¼	2–8⅜	2–7½	1½–7¾	1½–8⅜	1½–9	1½–6¼	1½–6½	1½–6⅞	1½–7⅛	1½–7⅜	1½–7¾	1½–8	1¼–8¼	1½–8½	1½–8⅞	……	……	……
75 R.P.M.	850	850	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	……	……	……
H.P.	¾	¾	1	1½	1½	1½	2	2	3	3	3	3	3	5	5	5	……	……	……
Eff	36	41	40	44	46	46	43	45	45	46	46	45	45	45	45	44	……	……	……
Size	3–6⅜	3–7¾	3–9	3–10	2–8⅝	2–9	2–6¾	2–7	2–7¼	2–7½	2–7¾	2–8	2–8¼	2–8½	2–8¾	2–9	……	……	……
100 R.P.M.	850	850	850	850	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	……	……	……
H.P.	¾	1	1½	1½	2	2	3	3	3	5	5	5	5	5	5	5	……	……	……
Eff	42	46	47	51	50	52	43	44	45	46	46	47	47	48	48	49	……	……	……
Size	3–6⅞	3–8	3–9¼	3–7¾	3–8⅜	3–9	3–9½	3–6⅞	3–7⅛	3–7⅜	3–7⅝	3–8	3–8¼	3–8½	3–8¾	3–9	3–9¼	3–9½	3–9⅞
150 R.P.M.	850	850	850	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
H.P.	1	1½	1½	2	2	3	3	3	3	5	5	5	5	5	7½	7½	7½	7½	10
Eff.	43	52	56	54	58	59	60	61	61	61	61	59	59	58	57	57	54	52	49
Size	3–7⅛	3–8⅜	3–9½	3–8	3–8½	3–9	3–9⅝	3–6⅞	3–7⅛	3–7½	3–7¾	3–8	3–8¼	3–8½	3–8¾	3–9	3–9⅜	3–9⅝	3–9⅞
175 R.P.M.	850	850	850	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
H.P.	1½	1½	2	3	3	3	3	5	5	5	5	5	5	7½	7½	7½	7½	10	10
Eff.	42	50	57	55	60	64	64	65	65	64	64	64	63	63	62	62	57	55	54
Size	4–7⅝	4–8¾	4–9¾	4–8½	4–9⅛	3–9¼	3–9¾	3–7	3–7¼	3–7⅝	3–7⅞	3–8⅛	3–8⅜	3–8⅝	3–8⅞	3–9⅛	3–9⅜	3–9⅝	3–9⅞
200 R.P.M.	850	850	850	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
H.P.	1	1½	2	2	3	3	5	5	5	5	5	7½	7½	7½	7½	7½	10	10	10
Eff.	56	62	67	67	63	63	65	67	67	66	65	65	65	64	64	63	59	59	58
Size	4–8	4–9	4–10	4–8¾	4–9¼	3–9⅝	3–7	3–7¼	3–7⅝	3–7⅞	3–8⅛	3–8⅜	3–8½	3–8¾	3–9	3–9¼	3–9½	3–9¾	3-10
250 R.P.M.	850	850	850	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
H.P.	1½	1½	2	3	3	5	5	5	5	7½	7½	7½	7½	7½	7½	10	10	10	15
Eff.	56	67	73	68	68	65	63	66	67	66	66	66	68	69	69	67	66	64	63
Size	4–8½	4–9⅜	4–8⅝	4–9⅛	4–9⅝	4–10	3–7⅜	3–7⅝	3–7⅞	3–8⅛	3–8⅜	3–8½	3–8¾	3–9	3–9⅛	3–9⅜	3–9⅝	3–9⅞	……
300 R.P.M.	850	850	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	……
H.P.	1½	2	3	3	5	5	7½	7½	7½	7½	7½	7½	10	10	10	10	15	15	……
Eff.	54	69	63	65	65	66	60	61	63	65	66	68	69	69	71	69	69	68	……
Size	5–8½	5–9½	5–10¼	5–10⅞	5–11½	5–9½	5–10	5–10⅜	5–10¾	5–11⅛	5–11½	4–8⅞	4–9⅛	4–9⅜	4–9⅝	4–9¾	4–10	……	……
400 R.P.M.	850	850	850	850	850	1150	1150	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	……	……
H.P.	2	3	5	5	5	7½	7½	7½	7½	10	10	15	15	15	15	15	15	……	……
Eff.	56	58	62	67	67	68	69	71	72	70	67	66	67	67	67	69	69	……	……
Size	5–9⅛	5–9⅞	5–10½	5–11¼	5–11¾	5–9⅞	5–10¼	5–10⅝	5–11	5–11⅜	5–11¾	4–9⅛	4–9⅜	4–9⅝	4–9⅞	4–10	……	……	……
500 R.P.M.	850	850	850	850	850	1150	1150	1150	1150	1150	1150	1750	1750	1750	1750	1750	……	……	……
H.P.	3	5	5	5	7½	7½	7½	10	10	10	15	15	15	15	15	15	……	……	……
Eff.	49	56	63	66	70	71	73	75	76	73	70	70	72	72	71	74	……	……	……
Size	5–9¾	5–10⅜	5–11	5–11½	5–9¾	5–10⅛	5–10½	5–10⅞	5–11¼	5–11⅝	5–12	5–9¼	5–9½	5–9⅝	5–9⅞	5–10⅛	5–10⅜	5–10½	5–10¾
600 R.P.M.	850	850	850	850	1150	1150	1150	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750
H.P.	5	5	7½	7½	7½	7½	10	10	15	15	15	15	20	20	20	20	20	20	25
Eff.	43	54	61	67	68	72	74	76	75	73	71	71	71	72	71	71	71	72	72
Size	6–8¾	6–9¾	6–10½	6–11⅜	5–10⅛	5–10½	5–10⅞	5–11⅛	5–11½	5–11⅞	5–9¼	5–9½	5–9¾	5–9⅞	5–10⅛	5–10⅜	5–10½	5–10¾	5–11
700 R.P.M.	850	850	850	850	1150	1150	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750
H.P.	5	5	7½	7½	10	10	15	15	15	15	20	20	20	20	25	25	25	25	25
Eff.	45	55	64	68	65	69	72	76	74	72	72	72	72	72	72	72	74	75	75
Size	6–9¼	6–10	6–11	6–11⅝	6–10¼	6–10½	5–11⅛	5–11⅜	5–11⅝	5–12	5–9⅝	5–9¾	5–10	5–10¼	5–10⅜	5–10⅝	5–10¾	5–11	5–11¼
800 R.P.M.	850	850	850	850	1150	1150	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750
H.P.	5	7½	7½	7½	10	15	15	15	15	20	20	20	25	25	25	25	25	30	30
Eff.	45	56	62	71	65	69	70	73	74	73	69	71	71	73	74	75	77	77	75
Size	6–9⅞	6–10⅝	6–11¼	6–12	6–10½	6..10⅝	6–10⅞	6–11¼	6–11½	6–11⅞	6–9½	5–10⅛	5–10¼	5–10½	5–10¾	5–10⅞	5–11⅛	5–11¼	5–11⅜
900 R.P.M.	850	850	850	850	1150	1150	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750
H.P.	7½	7½	10	10	15	15	15	15	15	20	25	25	25	25	30	30	30	30	40
Eff.	40	52	63	71	63	70	73	75	78	75	65	68	71	72	73	76	76	76	77
Size	6–10½	6–11⅛	6–11¾	6–10⅜	6–10⅝	6–10¾	6–11	6–11⅜	6–11⅝	6–12	6–9¾	6–9⅞	6–10	5–10⅞	5–11	5–11⅛	5–11⅜	5–11½	5–11⅝
1000 R.P.M.	850	850	850	1150	1150	1150	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750
H.P.	7½	10	10	15	15	15	15	20	20	20	25	30	30	30	30	30	40	40	40
Eff.	36	48	59	59	64	71	75	77	78	76	64	67	70	70	73	75	75	75	76
Size	6–11¼	6–11¾	6–10½	6–10⅝	6–10¾	6–11	6–11⅛	6–11½	6–11¾	6–9¾	6–9⅞	6–10⅛	6–10¼	6–10⅜	6–10½	6–10¾	6–10⅞	6–11	6–11¼
1100 R.P.M.	850	850	1150	1150	1150	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
H.P.	10	15	15	15	15	15	20	20	20	30	30	30	30	40	40	40	40	40	40
Eff.	31	44	47	56	64	69	76	77	78	62	66	66	69	71	74	74	74	76	75
Size	6–11¾	6–10⅝	6–10¾	6–10⅞	6-11	6–11⅛	6–11⅜	6–11⅝	6–12	6–10	6–10⅛	6–10¼	6–10⅜	6–10½	6–10¾	6–10⅞	6–11	6–11⅛	6–11⅜
1200 R.P.M.	850	1150	1150	1150	1150	1150	1150	1150	1150	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
H.P.	15	15	15	20	20	20	20	20	25	30	30	40	40	40	40	40	40	40	50
Eff.	29	35	45	53	61	68	74	77	76	61	64	67	70	72	73	74	75	77	76

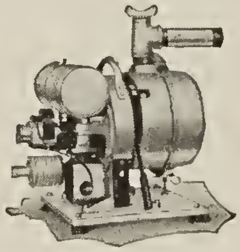
NOTE: The H. P. given above is the nominal H. P. of the motor recommended. If the head is below that stated, the capacity is increased and the H. P. required by the pump is also increased. The sizes of motors recommended above do not consider any decrease in head. In some cases the full load H. P. of the motor is only 5% above the B. H. P. of the pump. The company will not be responsible for motor failures due to a decrease in head. If any doubt exists as to the actual head, write the company or select the next larger size of motor. The motor should in all cases be protected by a properly adjusted overload and undervoltage device. This will safeguard the user against motor failure.

SELF PRIMING PORTABLE CENTRIFUGAL PUMP

Capacity: 2″—7,500 *gallons per hour*

Gasoline

Homelite Self Priming Portable Centrifugal Pump with built in gasoline engine.



Engine Specifications

Single cylinder, air cooled, 1½ H.P., 2-stroke. Cylinder, fin type, special fine grain cast iron. Bore 2⅛″. Stroke 2⅛″. Normal speed, 1800 r.p.m. Connecting rod, drop forged. Crank counterbalanced. Carburetor, float type. Ignition, high tension, waterproof Bosch magneto. Main bearings, radial ball. Fuel tank, 1 gallon —operates engine 4 to 5 hours.

Pump Specifications

Self Priming Centrifugal, horizontal type. Suction, 2″. Discharge 2″. Capacity up to 7,500 gallons per hour. See table. Impeller, bronze, open type. Suction lift, up to 20 feet. Total head, up to 50 feet. Main shaft, integral with the main shaft of engine. Bearings, radial ball. Strainer, 2″. No foot valve required. Will handle muddy, gritty, heavy liquids. Self priming chamber insures suction the moment pump is started. Weight 97 lbs. Size, 22″ x 20″ x 18″.

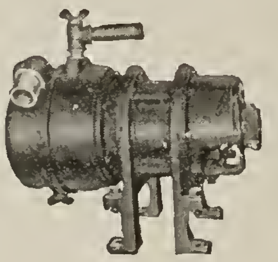
Capacity Table, Homelite Portable Pumps

The Homelite will pump the following quantities of water through smooth two inch pipe free from elbows and other obstructions:

Head in Feet	Gals. per Hour
5	7500
10	6600
15	6000
20	4800
25	4500
30	3900
35	3300
40	2100
45	1500
47	1200
50	720

Electric

Homelite Self Priming Portable Centrifugal Pump with built in electric motor.



Motor Specifications

General Electric 1½ H.P. 110 or 220 volts A.C., 60 cycle, single phase and 110, 220 or 550 volts, three-phase.

Pump Specifications and Capacity

Same as gasoline unit. Weight 135 lbs.

Principal Uses

Homelite Portable Centrifugal Pumps with built in gasoline engine, because of their portability, dependability and durability are widely used throughout the world.

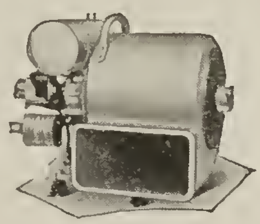
Contractors, engineers and builders use it for pumping out excavations, trenches, cellars, sewers, etc. Telephone, light and power companies make Homelite standard equipment for pumping out manholes. As a bilge pump it is being used on barges, scows and boats. Camps depend on it for their water supply. And the adaptations multiply daily, meeting unusual pumping requirements. The Self Priming Pumps (gasoline and electric) are especially favored where it is advantageous to have a pump which will handle seepage as well as volume. These self priming units will handle anything from 1 gallon per hour to 7,500 gallons per hour. Being air cooled, the engine will neither freeze up in winter nor burn out if run after the hole goes dry.

The compact size and low weight give these units a unique degree of portability.

The self priming electric pump is widely used in confined spaces such as mines or tunnels and in construction work where current is available or engine exhaust is undesirable.

Manufactured by
HOMELITE CORPORATION
Port Chester, N. Y.

HOMELITE Portable Blower



Operated by built in gasoline engine.

Engine Specifications

Same as for Homelite Pumps.

Blower

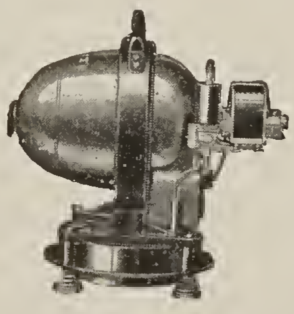
Capacity, 3,000 cubic feet air per minute. Weight, 75 lbs. Dimensions, 16″ x 25″ x 22″.

Principal Uses

Ventilating manholes, sewers, cellars, subways and wherever foul air, gases and dust should be removed to promote safety and comfort.

◆

HOMELITE Portable Generator



Operated by built in gasoline engine.

Engine Specifications

Same as for Homelite Pumps.

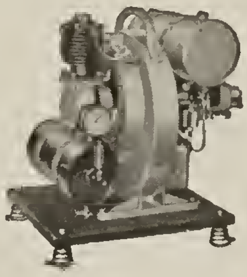
Generator

Capacity, 110 volts D.C., 600 watts. Weight, complete unit, 110 lbs. Dimensions, 21″ x 21″ x 14″.

Principal Uses

Operating motors, pumps, flood-lights, hoists, heaters, fans, electrical tools, etc., with ½ H.P. rating or less. The "life saver" of hundreds of contractors and builders on jobs where city current is unavailable, on costly overtime night work when city current fails, or where city current is costly. Same dependable Homelite gasoline engine used as in Homelite pumps and blowers.

HOMELITE Portable Air Compressor



Operated by built in gasoline engine.

Engine Specifications

Same as for Homelite Pumps.

Compressor

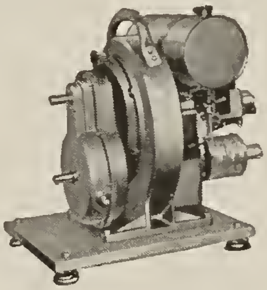
Capacity, 6 cubic feet of air per minute. Pressures up to 100 pounds per square inch. Weight, complete unit, 85 pounds.

Principal Uses

Operating pneumatic hammers, drills for brick, concrete, etc., stone engraving tools, painting sprayers, tree sprayers, boat whistles and fog horns, for inflating automobile tires, in fact for doing anything that can be done with compressed air within the capacity of this unit.

◆

HOMELITE Portable Engine



Engine Specifications

Same as for Homelite Pumps. Weight, complete unit with 6 feet flexible shaft and clutch, 100 pounds.

Two Speed Power Unit

Consisting of engine as above with transmission gear to second shaft and driving pulley fitting both shafts. Shaft Speeds, 1800 r.p.m. and 450 r.p.m. Weight 85 pounds.

Principal Uses

Operating drills, grinding and polishing wheels, circular saws, pumps, blowers, compressors, etc.

Manufactured by

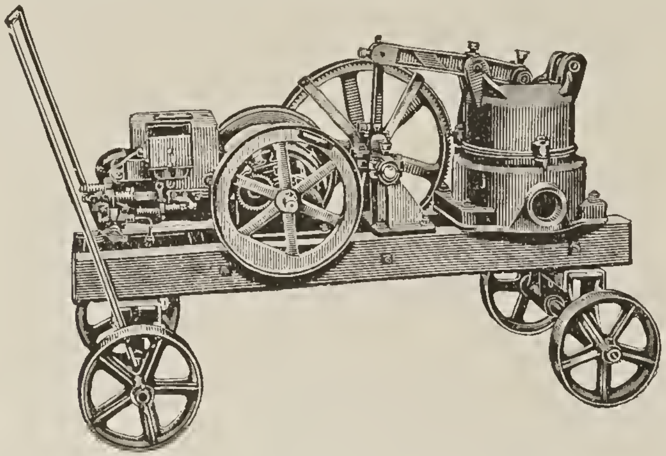
HOMELITE CORPORATION

Port Chester, N. Y.

MANY USES FOR JUMBO TRENCH PUMPS

Contractors, bargemen and plumbers use these diaphragm pumping outfits on flooded trenches, ditches, cellars, sewers, foundations, cofferdams, irrigation systems; for bilge pumping, on barges, lighters and schooners, and to pump any liquid or sewage no matter how gritty, sludgy or squdgy it may be.

YOU ARE GUARANTEED the maximum service from Jumbo Diaphragm Pumping Outfits.



Realizing that the contractor's work is such that he **must** have a dependable machine, our engineers have left nothing undone to insure a strong, durable, and accessible outfit.

The Engine

With outfits Nos. 113, 114 and 123 we use our standard 1¾ H. P., 1924 model Jumbo. It has a normal speed of 500 R. P. M. and is equipped with a speed regulator by which the speed can be varied 100 R. P. M. while engine is operating. Bore and stroke, 3½″ x 5″; crankshaft 1¼″; flywheel 16″.

With outfits Nos. 313, 314, 323, 324, our standard Jumbo 3 H. P. is used. Speed 450 R. P. M. which can be varied by regulator 75 R. P. M. while engine is running. Bore and stroke, 4½″ x 6″; crankshaft $1\frac{9}{16}$″; flywheel 21″. Engine equipped with Wico Magneto.

The Jack

The jack is simple in design but massive in construction. A strong box type frame carries 1¼″ crankshaft of drop forged steel having a 5″ throw. The bearings are removable die castings 2½″ long. Malleable iron connecting rod with die cast bearing at large end and removable bronze bushing at small end. The large machine cut gear is 21.6″ in diameter, 1¾″ face, and is equipped with gear guard. The power lever or rocker arm is attached to the pump by large hardened and ground pins, and removable phosphor bronze bushings form the bearings for these pins.

The jack gives 65 strokes per minute with the 1¾ H. P. engine and 70 strokes with the 3 H. P.

Diaphragm Pump

The pump is specially designed for power drive and constructed to withstand the hard work imposed upon it. The diaphragm is made of the best quality rubber and is guaranteed for severe service. The suction valve is of metal, rubber faced and easily removed. By virtue of large valve openings there is practically no obstruction to the passage of semi-liquid or solid matter. The lever operating the diaphragm is so designed as to lift the diaphragm vertically, thus eliminating the side motion that would tend to shorten its life and consume power.

Outstanding Features of Our Diaphragm Pumps

1. Pumps specially constructed for hand or power.
2. Machined valve seats.
3. Valve seats rounded to prevent pebbles, etc., lodging under valves causing pump to lose its suction.
4. Large hinged valve with power pump capacity.
5. Pump made with side or bottom suction.
6. Pump easily drained in cold weather.

Above shows No. 3 and No. 4 hand diaphragm pumps

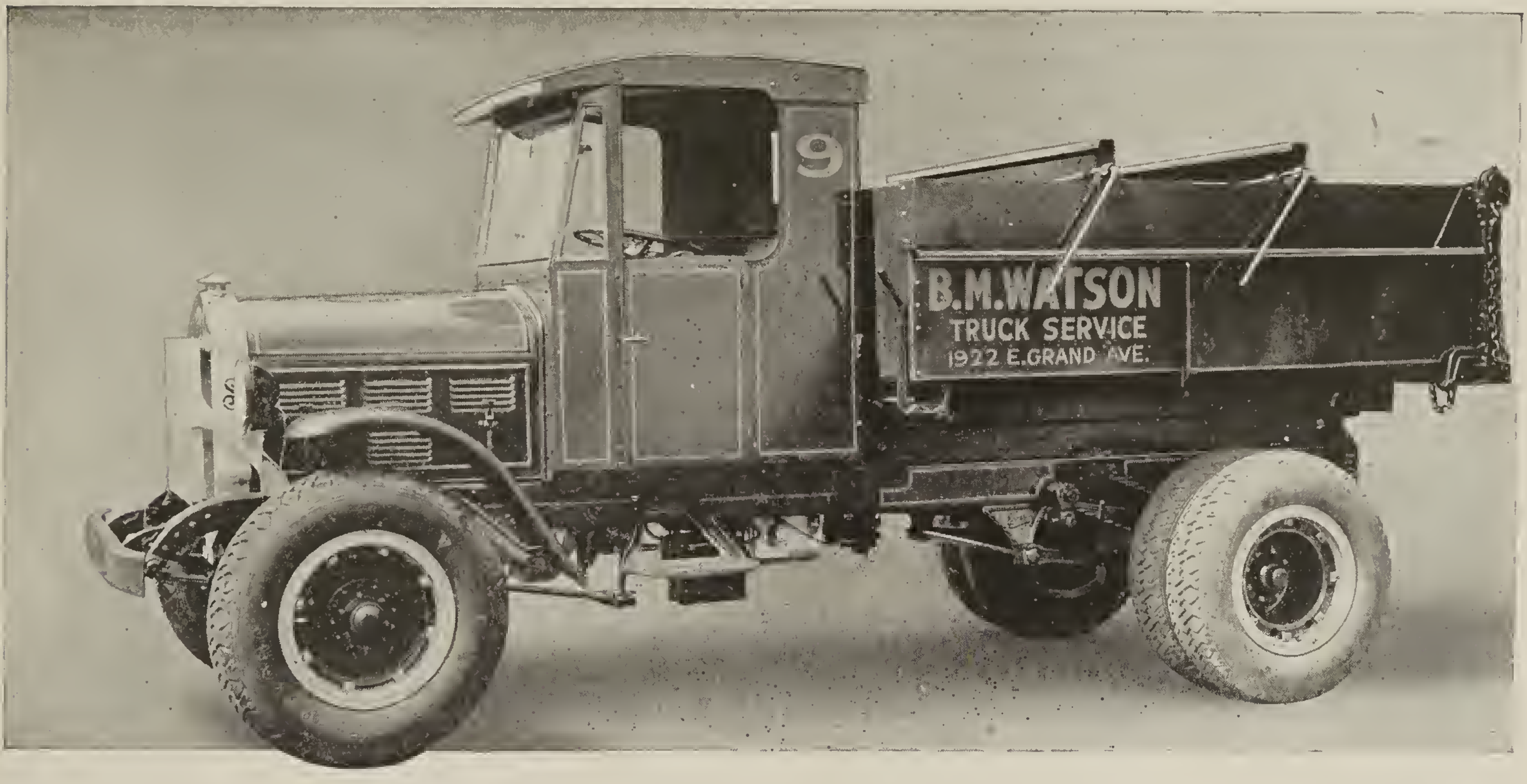
7. Quality rubber diaphragm and valves.
8. Pump joint ground so as to form a perfect seal on diaphragm rubber.
9. Rounded top prevents splashing.
10. Discharge and handle may be changed to either right or left side.

Made in Sizes No. 3 with 3″ Suction—Weight 160 lbs.; and No. 4 with 4″ Suction—Weight 216 lbs.

THESE DIAPHRAGM PUMPS are of the simplest type made, two valves and a strong rubber diaphragm which creates suction by an up-and-down motion—constitutes the pumping mechanism proper. There are no complicated parts to get out of order, no sliding contacts to become worn by gritty materials.

These pumps are unexcelled for rough service such as contractors require in pumping out excavations, trenches, sewers and quarries. They are used in large numbers for this class of work by contractors, railroad and construction companies.

Many of them are used for bilge pumping on vessels, barges and dredges. For this class of work the pump with the bottom suction is preferable. The large capacity and rugged construction of our pumps make them particularly suitable for this service. Mines that use the cyanide process employ diaphragm pumps for handling slimes and other semi-fluids. Where specified, we can furnish leather instead of rubber diaphragms at an extra cost.



Sterling Special Road Builder

Wheelbase, Dump	139″
Gravel Body	Max. 3½ Yds.
Body and Load	9530 Lbs.
Chassis Weight	6470 Lbs.
Maximum Total Weight	16000 Lbs.
Engine	Sterling
Bore and Stroke	3¾″ Bore x 4½″ Stroke
Cylinders	6 Cast Enbloc
Cylinder Heads	Red Head Ricardo Removable
Horsepower (Brake)	63 H. P. Governed at 2200 R. P. M.
Horsepower (N. A. C. C. Rating)	33.7
Displacement	298 Cubic Inches
Connecting Rod Bearings	2″x1½″
Connecting Rod—Center to Center	8¾″
Number of Main Bearings	7
Front Main Bearing	(1)—2⅜″x1⅝″
Intermediate Bearings	(4)—2⅜″x1⅜″
Center Main Bearing	(1)—2⅜″x2⅝″
Rear Main Bearing	(1)—2⅜″x2¾″
Piston Pin Bearing	¾″x2½″
Camshaft Diameter	1 11/32″
Crankshaft	Chrome Nickel Steel, Heat-Treated
Connecting Rods	45 Carbon Steel, Heat-Treated
Valves	Special Alloy Steel
Valve Diameter in the Clear	1⅝″
Push Rods, Hollow, Case-Hardened and Grnd, ⅝″ Dia.	
Lubrication	Force Feed to all Bearings
Engine Suspension	3 point—Flexible
Ignition	Magneto—Impulse Coupling
Carburetor, 1¼″	Sterling—Zenith

There's a
Sterling
for every
hauling
requirement

Radiator	Tubular with Cast Tank and Frame
Fan	20″ Diameter
Universal Joints	Spicer
Steering Gear	Cam and Lever
Steering Wheel	20″ Diameter
Clutch	Multiple Disc
Clutch, Number of Driving Discs	Seven
Clutch, Number of Driven Discs	Seven
Brakes—Service	Rear Wheels
Brakes—Emergency	Propeller Shaft
Transmission	Sliding Gear—7 Speed
Transmission—Face Width of Gears	1⅛″
Road Speed, 34x7 Pneumatic	29 M. P. H. Direct 37 M. P. H. Step UP
Frame, Pressed Steel, Flexible, Wood Lined and Bolted	7″

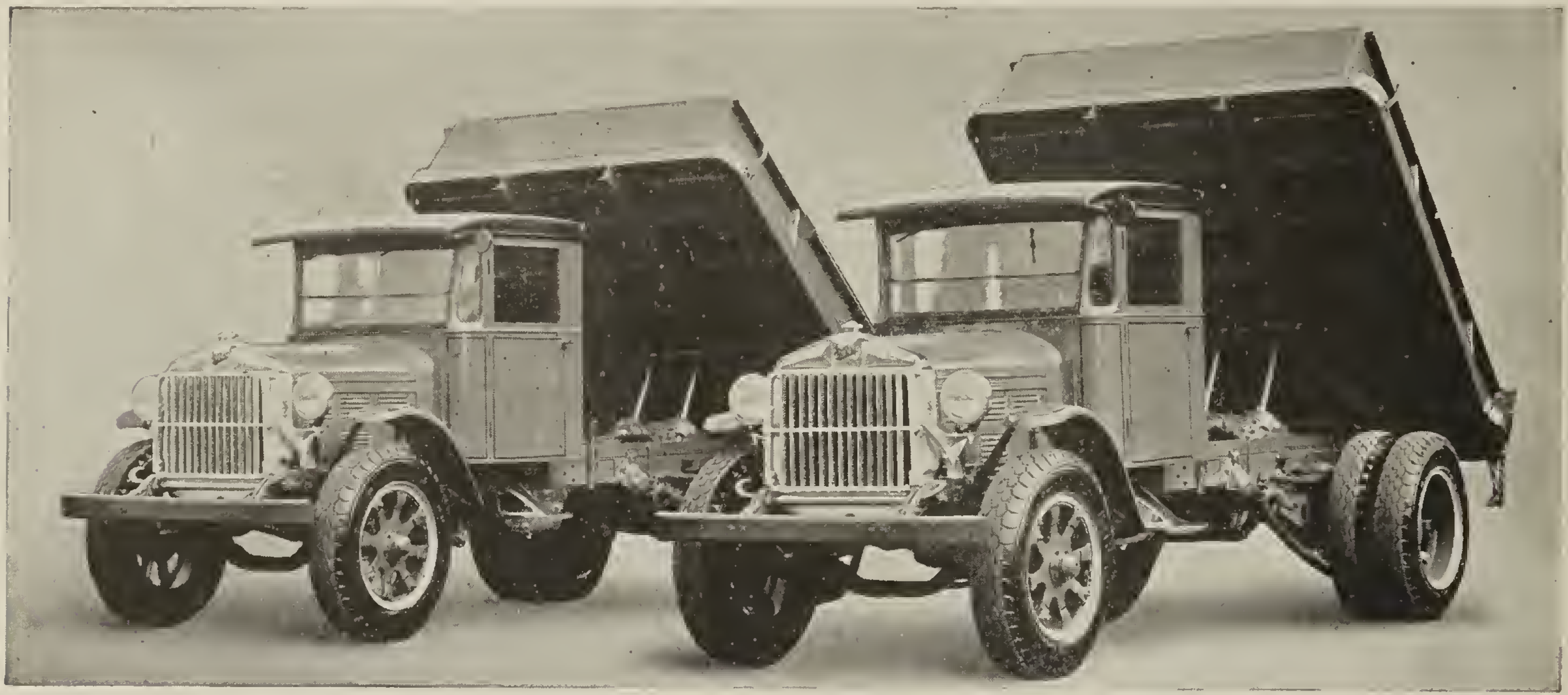
Springs, Front	48″ x3″	Chrome Vanadium Steel
Springs, Rear	54″ x3″	
Springs Auxiliary	35½″x3″	

Axle, Front	I-Beam, One-piece Forging
Axle, Rear	Double Reduction Drive, Full Floating
Axle Reduction—Dump—Pneu. Tires	7¾ to 1
Wheels	Metal Disc
Tires, Pneumatic, Front Standard	34″x7″
Tires, Pneumatic, Rear Standard	34″x7″ Dual
Track, Front, with 34″x7″	64⅛″
Track, Rear, with 34″x7″ Dual	64⅛″
Diameter of Turning Circle	45 Feet
Means of Propulsion	Radius Rods
Body Length—Dump	3½ Yd.—8′0″ long—5′6″ wide— 27″ high—Swinging Partitions
Gasoline Tank Under Seat	23 Gallons

Standard Equipment—Open Seat with Windshield, Instrument Panel, Oil Gauge, Oil Side and Tail Lamps, Speedometer, Warning Signal, License Bracket, Tools, Jack, Oil Can, Air Cleaner, Oil Filter, and Gascolator.

Special Equipment at Extra Cost—Cab, Starter, Generator, Ammeter, Electric Lights, Bumper, Radiator Guard, Tire Pump, Presto-Lites, Towing Devices and Skid Chains.

The above specifications are subject to change without notice.



Sterling Model DC23-64KS

Wheelbase, Standard	166″
Wheelbase, Long	180″
Wheelbase, Dump and Tractor	154″
Gravel Body	Maximum 4 Yards—154″ W. B.
Body and Load	15,900 Lbs.
Chassis Weight	7,100 Lbs.
Maximum Total Weight	23,000 Lbs.
Engine	Sterling KS
Bore and Stroke	4″ Bore x 4¾″ Stroke
Cylinders	6 Cast Enbloc
Cylinder Heads	Red Head Ricardo Removable
Horsepower (Brake)	71 H. P. Governed at 2000 R. P. M.
Horsepower (N. A. C. C. Rating)	38.4
Displacement	358 Cubic Inches
Connecting Rod Bearings	2¾″x1½″
Connecting Rod—Center to Center	10¼″
Number of Main Bearings	7
Front Main Bearing	(1)—3″x1⅞″
Intermediate Bearings	(4)—3″x1½″
Center Main Bearing	(1)—3″x3″
Rear Main Bearing	(1)—3″x3″
Piston Pin Bearing	1″x2″
Camshaft Diameter	1⅜″
Crankshaft	Steel, Heat-Treated
Connecting Rods	Steel, Heat-Treated
Valves	Special Alloy Steel
Valve Diameter in the Clear	1¾″
Push Rods, Hollow, Case-Hardened and Grnd., ⅝″ Dia.	
Lubrication	Force Feed to All Bearings
Engine Suspension	3 point—Flexible
**Ignition	Magneto—Impulse Coupling
Carburetor—1½″	Sterling—Zenith
Radiator	Tubular with Stamped Tank and Sides

There's a
Sterling
for every
hauling
requirement

Fan	20″ Diameter
Universal Joints	Spicer
Steering Gear	Cam and Lever
Steering Wheel	20″ Diameter
Clutch	Multiple Disc
Clutch, Number of Driving Discs	Seven
Clutch, Number of Driven Discs	Seven
Brakes—Service	Rear Wheels
Brakes—Emergency	Jackshaft—Dual
Transmission	Sliding Gear—4 Speed
Transmission—Face Width of Gears	1⅛″
Chains	1¾″ Pitch—1″ Diameter Roller—1″ Wide
Sprockets	15-43 Standard and Long, 13-43 Dump
Reduction (Standard)	9.2
Reduction (Dump)	10.7
Road Speed, Solid Tires—36″, 23 M.P.H. Std. & Long, 20 M.P.H. Dump	
*Road Speed, Pneu. Tires—40″, 26 M.P.H. Std. & Lg., 22 M.P.H. Dump	
Frame, Pressed Steel, Flexible, Woodlined and Bolted	7″ Dump and Long Wheelbase—reinforced

Springs, Front, 8 Leaves	48″ x3″	Chrome Vanadium Steel
Springs, Rear, 14 Leaves	54″ x3″	
Springs, Auxiliary, 8 Leaves	37½″x3″	

Axle, Front	I-Beam, One-piece Forging
Axle, Rear—Sterling	I-Beam, One-piece High Grade Solid Alloy Steel—Heat-Treated
Wheels	Wood—Metal Felloes
Tires, Solid—Front, Standard	36″x5″
Tires, Solid—Rear, Standard	36″x12″
Tires, Pneu.—Front, Standard	Extra, See list below
Tires, Pneu.—Rear, Standard	Extra, See list below
Track, Front, with Standard Tires	63″
Track, Rear, with Standard Tires	69¾″
Means of Propulsion	Radius Rods
Gasoline Tank Capacity	28 Gallons

**When electric lights and battery are specified—distributor ignition is used without magneto.

*For greater efficiency, higher road speeds, and greater low speed performance than specified on pneumatic tires, the Sterling Auxiliary 3-speed transmission should be used.

Standard Equipment—Instrument Panel, Oil Gauge, Oil Side and Tail Lamps, Speedometer, Warning Signal, License Bracket, Tools, Jack, Oil Can, Air Cleaner, Gascolator and Oil Filter.

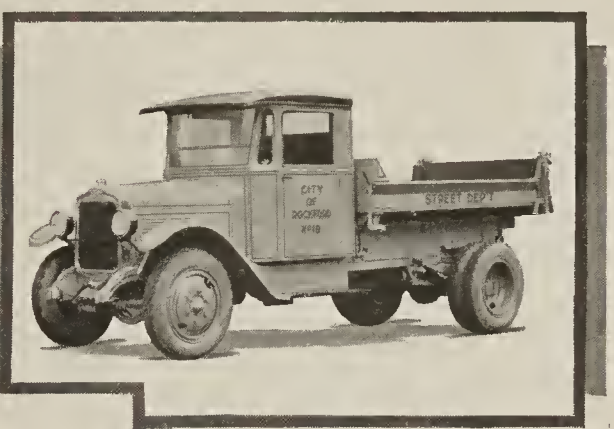
Special Equipment at Extra Cost—Cab, Starter, Generator, Ammeter, Electric Lights, Bumper, Radiator Guard, Tire Pump, Presto-Lites, Towing Devices, Skid Chains, and Auxiliary 3-Speed Transmission.

Optional Pneumatic Tires at Extra Cost {38″x7″ Single Front.
40″x8″ Dual Rear—Overall Tire Width, 95½″.

Standard pneumatic tire equipment with dual rears is 40″x8″. A gear reduction of 9.2 is furnished with such tire equipment to give 26 miles per hour at 2000 R. P. M.

The above specifications are subject to change without notice.

from 1 to 12 ton



Above: Model DB11—a ruggedly constructed truck for speedy and economical hauling.

Below: Model DC26—a popular sized truck for heavy hauling. Designed and built for a long life of continuous grueling service.

The Same High Standard of Sterling Quality Prevails

Regardless of your trucking problems, there is a Sterling to meet your exact requirements. Each model and style possesses the same high quality construction that makes Sterling the by-word of better truck design and economical transportation. Chain, worm and bevel drive in commercial and dump units.

You are invited to write for Sterling data. Just give us a brief outline of your requirements and complete information will be sent you without obligation, of course.

STERLING MOTOR TRUCK CO., Milwaukee, Wis.

31 Factory Branches at Your Service

Boston
Providence
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Newark
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Sacramento
Fresno
Stockton
San Jose
Los Angeles
San Diego
Bakersfield
San Bernardino
Seattle
Portland

FULLER & JOHNSON ENGINES

AN OPEN LETTER

In building Engines for industrial and agricultural purposes, we are called upon to serve a variety of requirements. We believe these requirements can be served best by providing a style and type that is built for the job it has to do.

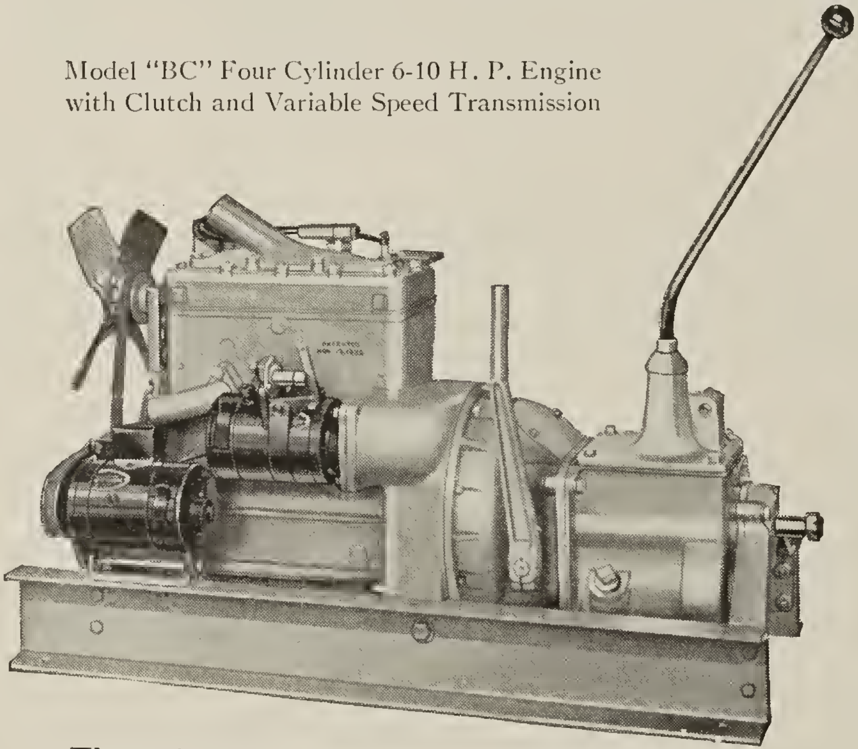
The building of high grade engines that can be depended upon to render satisfactory service over a period of years while operating under considerably less than ideal conditions, is a highly technical problem requiring both skill and a thorough knowledge of good engineering practice. In both our Production and Engineering Departments, the various operations are performed under the supervision of men specially trained in their particular phase of gasoline engine design or production and as a result we are particularly well fitted to build engines that will best serve the requirements that engines are called upon to meet.

Our Engineering staff is at the disposal of any who wish to consult with us. As specialists in the manufacture of small single and multi-cylinder engines, we are well equipped to handle practically any power requirement.

Fuller & Johnson Mfg. Co.

Model "BC" Four Cylinder 6-10 H. P. Engine with Clutch and Variable Speed Transmission

Delco-Remy Electric Starter and Ignition System Also Furnishes Lights on the Machine



Borg & Beck Fully Enclosed Dry Disc Type Clutch. Can be Equipped with Hand Lever or Foot Pedal

Three Speeds Forward and One Reverse

Here it is! A Fuller & Johnson four cylinder Model "BC," 6-10 H. P. Industrial Power Unit with variable speed transmission—three speeds forward and one reverse. The fully enclosed dry disc type clutch is mounted on the main shaft operated at engine speed. Cut shows unit with metal house removed.

This unit is ideal for operating industrial trucks, small excavating machines, conveyors, small tractors, and other jobs where variable speed is essential. The transmission is sturdily built and permits continuous operation in first and second gear without undue strain or wear on the working parts.

This Model "BC" Engine can be equipped with a smaller transmission for use where continuous operation in first or second gear is not required.

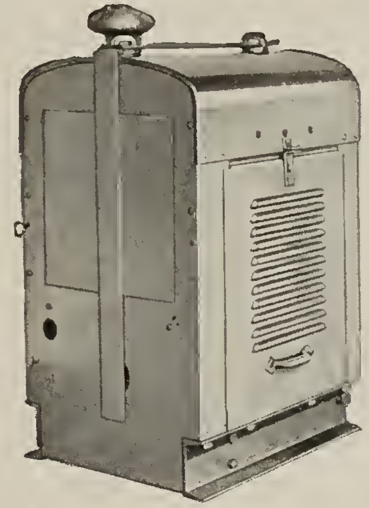
This Power Unit can be equipped with an Electric Starter of the automotive type.

The illustration shows the compact assembly of the generator and starting motor. The generator charges the 6-volt battery which supplies current for the starting motor and also for lights on the machine.

The Fuller & Johnson two cylinder, Model "BB" 3-5 H. P., the Fuller & Johnson Four Cylinder, Model "AX" 20-25 H. P., and Model "AXK" 25-30 H. P., Power Units can be furnished with variable speed transmission and electric starter.

FULLER & JOHNSON ENGINES

Model "BB" 3-5 H. P. Two Cylinder Engine   Model "BC" 6-10 H.P. Four Cylinder Engine



Model "BB" 3-5 H. P. Two Cylinder Engine with house. Note radiator, guard and fuel tank lock.

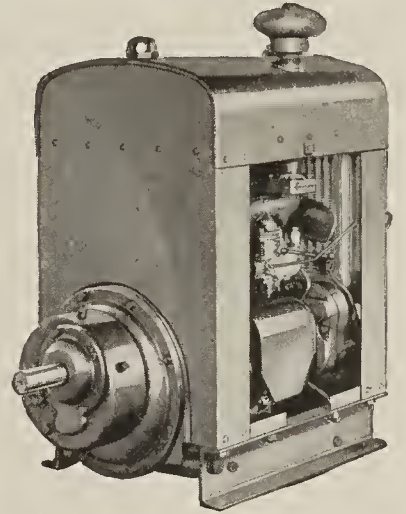
THE RICARDO HEAD

Gives Maximum Power

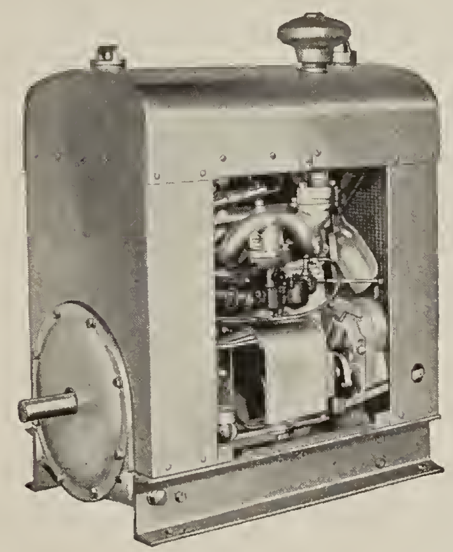
The design of the Fuller & Johnson Model "BB" 2-cylinder and "BC" 4-cylinder Engines follow closely the high compression automotive power units, which are so outstanding today. The use of the famous Ricardo Head, introduced to America five years ago, insures greater economy and added power. Engines equipped with the Ricardo Head show a saving of as much as 10 per cent on fuel consumption at full load, and at part loads greater economy may be obtained.

In the Ricardo combustion chamber the compact form, the central location of the spark plug, the rapid swirling of the main body of the charge produced by the piston forcing the gas up into the chamber, all combine to scatter the flame rapidly throughout the mixture, thereby securing maximum power.

A large radiator is furnished as regular equipment. The over-size four-blade fan carried on hub mounted on ball bearings can be lubricated while engine is running. The metal house gives ample protection to the motor and is designed for convenience and accessibility.



Model "BB" 3-5 H. P. Two Cylinder Engine with 2:1 Gear Reduction. Wide inspection doors on each side of house.



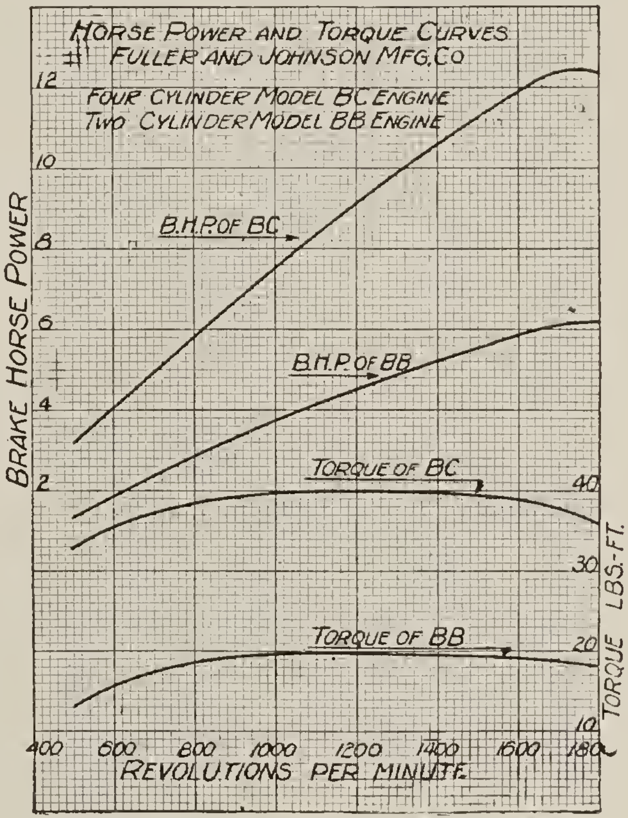
Showing "BC" Engine with Direct Drive. Wide inspection doors on each side of house.

For protection when not in use, a combination radiator guard, fuel cap and radiator cover lock can be furnished at a small additional cost.

Power can be taken off directly from the main shaft at engine speed or the engine can be furnished with speed reductions to reduce the speed of power take-off at ratios of 2 to 1 and also of 8 to 1. The 2 to 1 ratio can be furnished with either right or left hand direction of rotation. Should other reductions be required, further information concerning them will be gladly given on request.

Where the 2:1 speed reduction gears are used, the case carrying the drive shaft may be attached in any one of six positions determined by rotating it around the crank shaft at center before fastening it in place. This permits considerable latitude in determining the most compact and accessible mounting in each combination.

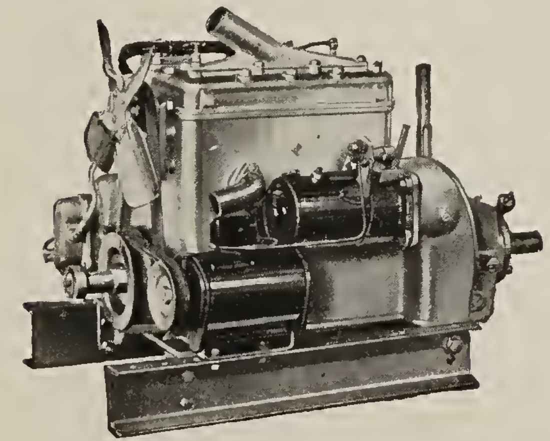
The Model "BC" four-cylinder engine can be supplied with the accessories, namely magneto, carburetor, etc., either on the right or the left hand side of the motor. The Model "BB" two cylinder engine is equipped with accessories on the left side of motor (see illustration above.)



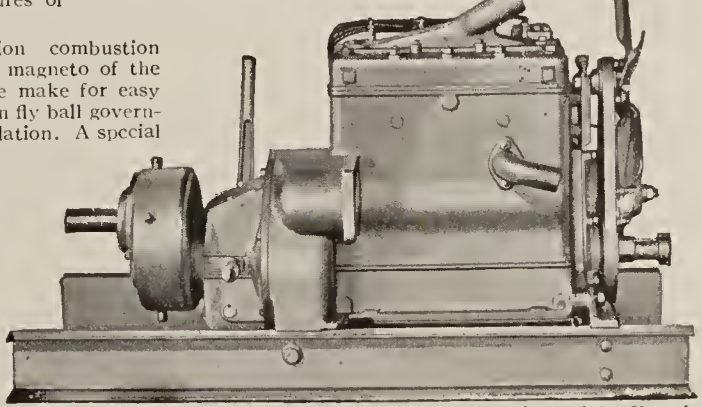
Right hand cranking, regardless of direction of rotation of the power take-off is one of the many outstanding features of these units.

The high compression combustion chamber, positive drive magneto of the rotary high tension type make for easy starting. The gear driven fly ball governor gives close speed regulation. A special speed control lever can be furnished which can be set where you want it, always under governor control.

The Model "BC" Engine can be equipped with or without clutch. The clutch illustrated below is fitted with ball bearing on the power take-off end and is fully enclosed.



Four Cylinder Model "BC" 6-10 H. P. Engine equipped with 6-volt generator and electric starter.



Model "BC" 6-10 H. P. Four Cylinder Engine with Clutch and 2:1 Gear Reduction showing side opposite Accessories. Note simplicity and well balanced construction.

FULLER & JOHNSON ENGINES

Specifications of Model "BB" and "BC" Engines

Motor—"BB" two cylinder. "BC" four cylinder.

Power—"BB" 3-5 H. P.; "BC" 6-10 H. P.

Speed—900-1400 R. P. M.

Bore—2⅝".

Stroke—3¼".

Rotation—Right hand (clockwise when facing the radiator end).

Cylinder—Honed (polished) to insure a perfectly round, smooth, straight bore.

Piston—Trunk type, grey iron with 4 rings; 3 compression and 1 oil control ring.

Connecting Rod—Drop forged steel I-beam construction.

Crankshaft—Carefully balanced, heavy, rugged, mounted on anti-friction bearings.

Flywheel—Heavy, accurately balanced, insuring smooth running, easy starting.

Camshaft—Cams forged integral with shaft.

Tappets—Flat foot type valve lifters

Ignition—High tension rotary magneto.

Lubrication—Circulating splash system, consisting of constant level splash troughs for each connecting rod, fed by a plunger pump driven by an eccentric on the camshaft. This pump also supplies oil to the valve tappet chamber from whence it is fed by gravity through drilled openings, to the camshaft bearings, timing gears and governor.

Cranking—Right hand, regardless of direction of power take-off.

Cooling—Radiator with ample capacity for full load operation. Oversized 4-blade fan with hub mounted on ball bearings and hollow shaft which can be lubricated while engine is running. Large water openings in block and between each cylinder and full length of cylinder, especially around the valves.

Manifold—Hot spot. Promotes perfect carburetion under all loads.

Oil Gauge—Bayonette type.

Clutch—Fully enclosed dry disc type, mounted on main shaft operated at engine speed.

Speed Reduction Gears—Furnished for 2 to 1 and 8 to 1 reduction. Information regarding other reductions on request. Gears are of alloy steel, heat-treated and hardened. Special tooth designs and anti-friction bearings provide quiet running, and long life.

Governor—Gear driven—fly ball throttling type, enclosed, runs in oil and gives close speed regulation.

Fuel Tank—Liberal size, made of heavy, lead coated terne plate (anti-rusting). Securely mounted in top of house. Fuel Pump or Vacuum Tank can be furnished.

House—Of heavy gauge steel. Wide doors on both sides. Can be equipped with radiator shield and fuel tank lock.

Dimensions—Length of house, on "BB" Engine, 20", width 17", height 29". On "BC" Engine, length 25", width 17", height 29".

Regular Equipment—Consists of engine, magneto, carburetor, air cleaner, radiator, fan, fuel tank, fuel cleaner and metal house mounted on steel channels all ready to operate.

Extras—Clutch, reduction gears, radiator guard, fuel pump, etc.; can be furnished according to purpose for which engine is to be used.

Lever Speed Changer—Permitting instant and convenient variation of governed speed of engine furnished on special order.

Slow Down Idling Device—Can be furnished for reducing speed of engine when running without load.

Electric Equipment—Separate 6-volt starting motor with Bendix drive on flywheel. Separate unit 6-volt generator and ignition system. This equipment also permits use of electric lights on the machine operated.

Any 6-volt automobile starting battery of a capacity greater than 75 ampere hours may be used on this engine and cables of suitable length for connecting battery to engine may be purchased at any automobile supply store or from Fuller & Johnson Mfg. Co., when length specifications are furnished.

ORDER THE ENGINE TO SUIT YOUR REQUIREMENTS

REFER TO OUTFIT NUMBER LISTED BELOW

Outfit No.	MODEL BBL 2 CYLINDER 3-5 H. P. ENGINE With Standard Combinations	R. P. M. of Take-off Shaft	Net Weight Pounds	Approx. Shipping Weight Pounds	Code Word
301	Less Power take-off	900–1400	321	354	Lona
301B	Direct Drive, stub shaft	900–1400	332	369	Lome
301D	Direct Drive, outboard bearing	900–1400	332	369	Luan
301F	Direct Drive, with clutch	900–1400	403	441	Loto
301H	2:1 gear reduction, take-off, engine rotation, with clutch	450– 700	421	466	Liso
301J	2:1 gear reduction, take-off shaft, anti-engine rotation: with clutch	450– 700	421	466	Linz
301L	2:1 gear reduction, take-off shaft, engine rotation, less clutch	450– 700	366	406	Lart
301N	2:1 gear reduction, take-off shaft, anti-engine rotation, less clutch	450– 700	366	406	Lent
301R	8:1 gear reduction, take-off shaft, anti-engine rotation, position "A", with clutch	112– 175	436	486	Lace
301T	8:1 gear reduction, take-off shaft, anti-engine rotation, position "B," with clutch	112– 175	444	491	Leon
301W	8:1 gear reduction, take-off shaft, anti-engine rotation, position "C," with clutch	112– 175	436	486	Lull

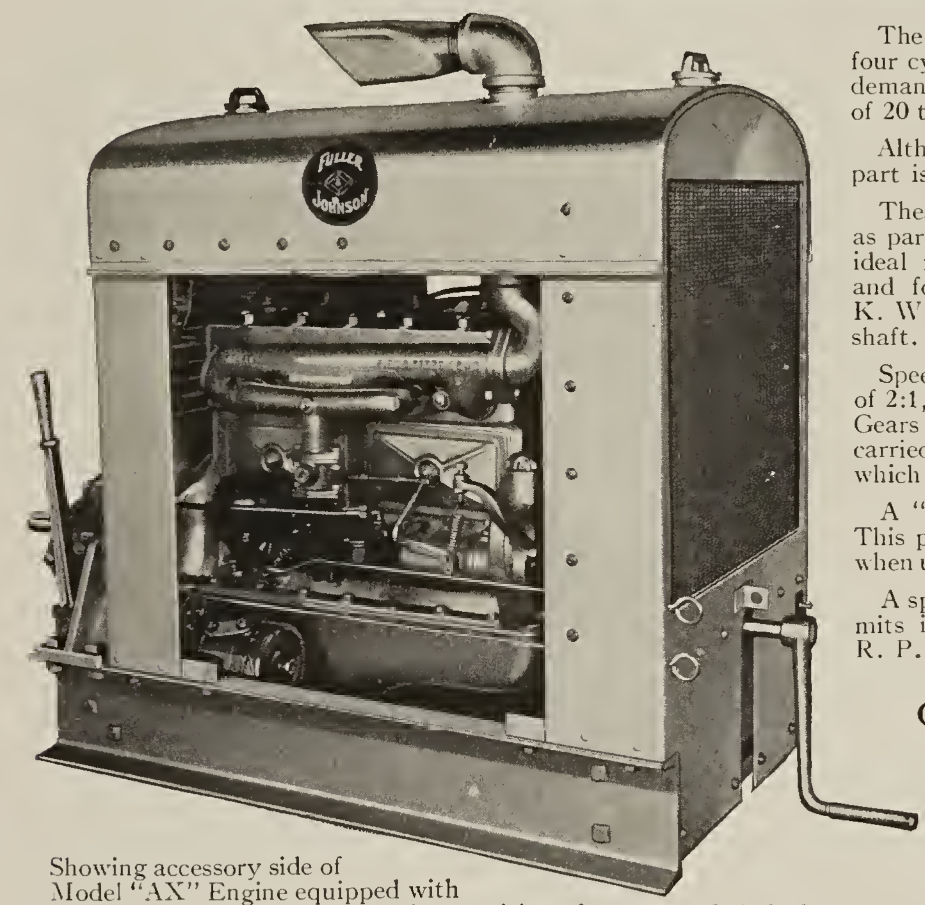
Unless otherwise ordered, engine governor will be set for 1200 R. P. M.

Outfit No.	MODEL BC 4 CYLINDER 6-10 H. P. ENGINE With Standard Combinations	R. P. M. of Take-off Shaft	Net Weight Pounds	Approx. Shipping Weight Pounds	Code Word
302AM	Right hand accessories, less power take-off	900–1400	421	465	Bale
302AR	Left hand accessories, less power take-off	900–1400	421	465	Bowl
302C	Right hand accessories, direct drive	900–1400	432	477	Bans
302D	Left hand accessories, direct drive	900–1400	432	477	Bafe
302E	Right hand accessories, direct drive, outboard bearing	900–1400	444	489	Batz
302F	Left hand accessories, direct drive, outboard bearing	900–1400	444	489	Blet
302G	Right hand accessories, direct drive, clutch	900–1400	504	539	Bete
302H	Left hand accessories, direct drive, clutch	900–1400	504	539	Bavo
302I	Right hand accessories, clutch, 2:1 gear reduction, take-off shaft engine rotation	450– 700	522	559	Beno
302J	Left hand accessories, clutch, 2:1 gear reduction, take-off shaft engine rotation	450– 700	522	559	Boem
302K	Right hand accessories, clutch, 2:1 gear reduction, take-off shaft anti-engine rotation	450– 700	522	559	Bick
302L	Left hand accessories, clutch, 2:1 gear reduction, take-off shaft anti-engine rotation	450– 700	522	559	Bism
302M	Right hand accessories, 2:1 gear reduction, take-off shaft engine rotation	450– 700	467	517	Bizo
302N	Left hand accessories, 2:1 gear reduction, take-off shaft engine rotation	450– 700	467	517	Bien
302P	Right hand accessories, 2:1 gear reduction, take-off shaft anti-engine rotation	450– 700	467	517	Bilt
302R	Left hand accessories, 2:1 gear reduction, take-off shaft anti-engine rotation	450– 700	467	517	Biow
302Y	Right hand accessories, 8:1 gear reduction, clutch, take-off shaft anti-engine rotation, position "A"	112– 175	537	593	Bloe
302Z	Left hand accessories 8:1 gear reduction, clutch take-off shaft anti-engine rotation, position "A"	112– 175	537	593	Bogo
302AC	Right hand accessories, 8:1 gear reduction, clutch, take-off shaft anti-engine rotation, position "B"	112– 175	545	601	Buhe
302AD	Left hand accessories, 8:1 gear reduction, clutch, take-off shaft anti-engine rotation, position "B".	112– 175	545	601	Befo
302AF	Right hand accessories, 8:1 gear reduction, clutch, take-off shaft anti-engine rotation, position "C"	112– 175	537	593	Blam
302AG	Left hand accessories, 8:1 gear reduction, clutch, take-off shaft anti-engine rotation, position "C".	112– 175	537	593	Bias

Unless otherwise ordered, engine governor will be set for 1200 R. P. M.

FULLER & JOHNSON ENGINES

Four Cylinder Model "AX" 20-25 H. P. and Model "AXK" 25-30 H. P.



Showing accessory side of Model "AX" Engine equipped with Electric Starter. Note convenient position of starter and choke levers.

The Fuller & Johnson Model "AX" and "AXK" four cylinder power units were designed to meet the demand where a compact self-contained power unit of 20 to 30 H. P. is required.

Although each unit is very compact yet every part is easily accessible.

These power units can be mounted on or built in as part of the machine it is to operate. They are ideal for connecting direct to rotary, centrifugal and force pumps. Electric generators up to 12 K. W. can be direct connected to the main drive shaft.

Speed reduction gears can be furnished in ratios of 2:1, 3:1, and 4:1 for either direction of rotation. Gears are of alloy steel, heat-treated and hardened, carried on shafts mounted on anti-friction bearings which provide for long life.

A "slow down" idling device can be furnished. This permits the engine to operate at idling speed when under no load.

A speed control lever can be furnished which permits instant change of governor speed from 900 R. P. M. to 1500 R. P. M.

Completely Enclosed Governor

Right Hand Cranking regardless of direction of power take - off rotation. Easy to start.

Full Pressure Lubrication

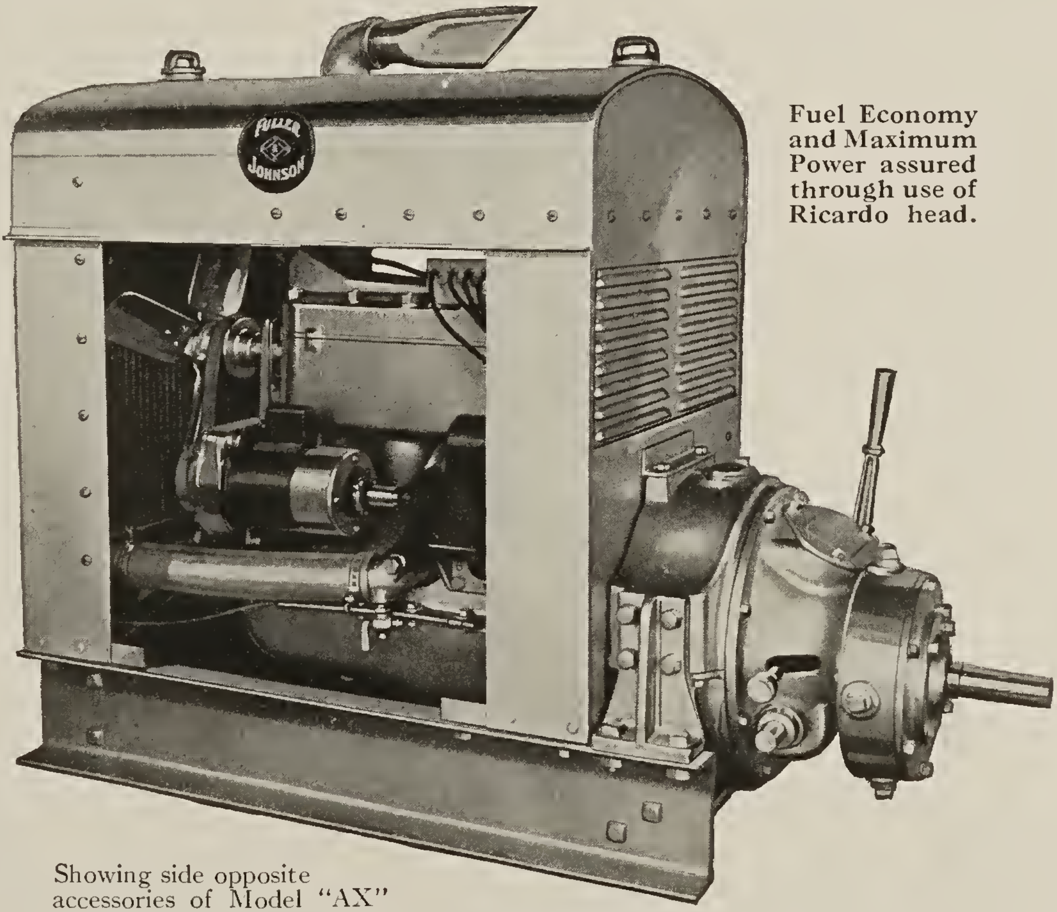
All bearings receive oil under pressure. The bottom pan provides a reservoir for the oil. A screen surrounding the pump strains the oil.

The "AX" and "AXK" engines are cooled by thermo-syphon circulation. A large four-blade fan of 17″ diameter is furnished. The radiator of large capacity is rigidly constructed and is securely bolted to the heavy gauge steel house furnished with this unit.

In addition to protecting the engine the steel house also covers the fuel tank which is mounted (bolted) in the top of the house.

A fuel cleaner of the type used on high-grade cars and trucks is furnished as standard equipment and is conveniently located just below the fuel tank.

On special order a starting motor and generator of automotive design can be mounted on the "AX" and "AXK" power units. Note illustration above. This equipment permits use of electric starter, also lights on the machine operated by the "AX" and "AXK" power units.



Showing side opposite accessories of Model "AX" Engine equipped with clutch and 2:1 gear reduction.

Fuel Economy and Maximum Power assured through use of Ricardo head.

"Known Everywhere as the Finest"

FULLER & JOHNSON ENGINES

Specifications of Models "AX" 20-25 and "AXK" 25-30 H. P.—4 Cylinder Engines

Motor—Four cylinder, four cycle.

Power—AX, 20-25 B. H. P.; AXK, 25-30 B. H. P.

Speed—900-1500 R. P. M.

Bore and Stroke—"AX", 3½" x 4½"; "AXK", 3¾" x 4¾".

Rotation—Clockwise when viewing cranking end.

Cylinder—Honed to insure round smooth bore.

Piston—Trunk type, grey iron with 3 rings.

Connecting Rod—Drop forged, I-beam construction.

Crankshaft—Drop forged steel, carefully balanced, heavy and rugged, mounted on 3 bronze backed babbitted bearings.

Flywheel—Heavy, and accurately balanced, insuring smooth running and easy starting.

Camshaft—Drop forged steel, cams integral, running on three bearings.

Ignition—High tension, rotary magneto equipped with impulse starter.

Lubrication—Full pressure system, oil being fed under pressure to crankshaft, connecting rod and cam shaft bearings.

Cranking—Right hand, regardless of direction of power takeoff rotation.

Cooling—Thermo-syphon circulation, radiator of sufficient capacity for full load operation. 17" diameter, 4-blade, adjustable fan driven by a V-belt.

Manifold—Hot spot, promoting perfect carburetion under all loads and conditions of operation.

Oil Gauge—Bayonette type.

Clutch—Fully enclosed dry disc type. Operates at engine speed.

Speed Reduction Gears—Can be furnished with 2:1, 3:1 and 4:1 reduction ratios in either direction of rotation. Gears are of alloy steel, heat-treated and hardened, carried on shafts mounted on anti-friction bearings providing for long life.

Governor—Enclosed gear driven of fly-ball throttling type, running in oil. Gives close speed regulation.

Fuel Tank—Capacity 8 gallons; made of heavy lead coated anti-rusting terne plate. Securely mounted in top of house.

House—Of heavy gauge sheet steel. Wide doors on both sides provided with horizontal louvers. Can be equipped with radiator shield and fuel tank lock.

Dimensions—Length, 31⅝"; width, 21⅝"; height, 36 7/16".

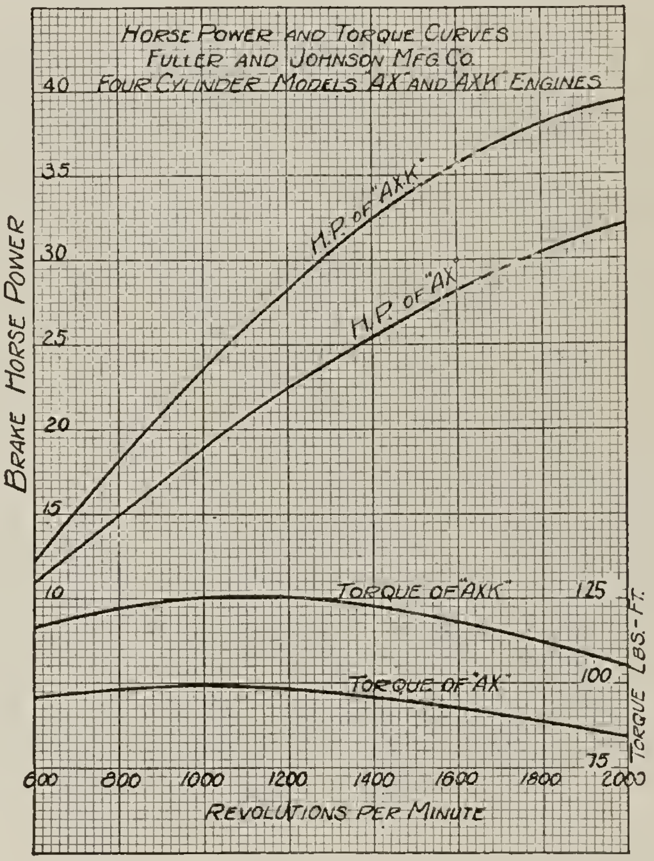
Regular Equipment—Consists of engine, carburetor, magneto, radiator, fan, fuel tank, air cleaner, fuel cleaner and metal house mounted on steel channels all ready to operate.

Special Equipment—Clutch, reduction gears, radiator shield, tank lock, etc., can be furnished according to purpose for which engine is to be used.

Slow Down Idling Device—Permits engine to operate at idling speed when under no load. This is manually controlled and can be furnished when specified.

Electric Equipment—Separate unit 6-volt starting motor with Bendix drive on flywheel. Separate unit 6-volt generator and ignition system. This equipment permits use of electric starter, also lights on the machine operated by the "AX" or "AXK" engine.

Any 6-volt automobile starting battery of a capacity greater than 85 ampere hours may be used on these engines and cables of suitable length for connecting battery to engine may be purchased at any automobile supply store or from Fuller & Johnson Mfg. Co., when length specifications are furnished.



The horse power shown above was obtained with engine equipped with all standard accessories except fan.

ORDER THE ENGINE TO SUIT YOUR REQUIREMENTS

Refer to Outfit Number Listed Below

Outfit Number	MODEL AX 20-25 H. P. 4-CYLINDER ENGINE Standard Combinations	R. P. M. Take-off Shaft	Net Weight	Approx. Shipping Weight	Code Word
272	Less power take-off	900–1500	770	811	Xert
272A	Direct drive, stub shaft take-off	900–1500	774	815	Xasp
272B	Direct drive, outboard bearing	900–1500	800	845	Xexx
272C	Direct drive, with clutch	900–1500	855	900	Xito
272D	2:1 gear reduction, take-off shaft, anti-engine rotation, with clutch	450– 750	935	995	Xeme
272E	3:1 gear reduction, take-off shaft, anti-engine rotation, with clutch	300 –500	935	995	Xeat
272F	4:1 gear reduction, take-off shaft, anti-engine rotation, with clutch	225– 375	935	995	Xist
272G	2:1 gear reduction, take-off shaft, engine rotation, with clutch	450– 750	935	995	Xurn
272H	3:1 gear reduction, take-off shaft, engine rotation, with clutch	300– 500	935	995	Xelk
272I	4:1 gear reduction, take-off shaft, engine rotation, with clutch	225– 375	935	995	Xola
272J	2:1 gear reduction, take-off shaft, anti-engine rotation, no clutch	450– 750	855	915	Xice
272K	3:1 gear reduction, take-off shaft, anti-engine rotation, no clutch	300– 500	855	915	Xcel
272L	4:1 gear reduction, take-off shaft, anti-engine rotation, no clutch	225– 375	855	915	Xape
272M	2:1 gear reduction, take-off shaft, engine rotation, no clutch	450– 750	855	915	Xego
272N	3:1 gear reduction, take-off shaft, engine rotation, no clutch	300– 500	855	915	Xown
272P	4:1 gear reduction, take-off shaft, engine rotation, no clutch	225– 375	855	915	Xpen

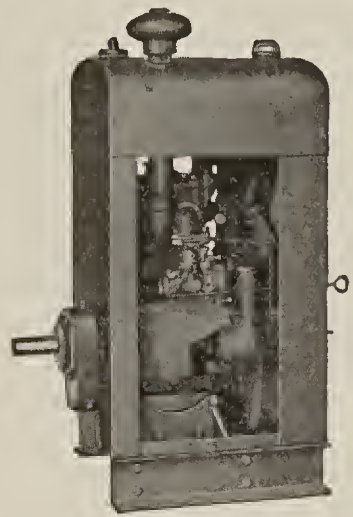
Outfit Number	MODEL AXK 25-30 H. P. 4-CYLINDER ENGINE Standard Combinations	R. P. M. Take-off Shaft	Net Weight	Approx. Shipping Weight	Code Word
273	Less power take-off	900–1500	795	836	Karrx
273A	Direct drive, stub shaft take-off	900–1500	799	840	Kanex
273B	Direct drive, outboard hearing	900–1500	825	870	Kinux
273C	Direct drive, with clutch	900–1500	880	925	Konox
273D	2:1 gear reduction, take-off shaft, anti-engine rotation, with clutch	450– 750	960	1020	Kecex
273E	3:1 gear reduction, take-off shaft, anti-engine rotation, with clutch	300– 500	960	1020	Ketzx
273F	4:1 gear reduction, take-off shaft, anti-engine rotation, with clutch	225– 375	960	1020	Kranx
273G	2:1 gear reduction, take-off shaft, engine rotation, with clutch	450– 750	960	1020	Kisax
273H	3:1 gear reduction, take-off shaft, engine rotation, with clutch	300– 500	960	1020	Kumex
273I	4:1 gear reduction, take-off shaft, engine rotation, with clutch	225– 375	960	1020	Korex
273J	2:1 gear reduction, take-off shaft, anti-engine rotation, no clutch	450– 750	880	940	Kentx
273K	3:1 gear reduction, take-off shaft, anti-engine rotation, no clutch	300– 500	880	940	Kultx
273L	4:1 gear reduction, take-off shaft, anti-engine rotation, no clutch	225– 375	880	940	Keanx
273M	2:1 gear reduction, take-off shaft, engine rotation, no clutch	450– 750	880	940	Klesx
273N	3:1 gear reduction, take-off shaft, engine rotation, no clutch	300– 500	880	940	Kuppx
273P	4:1 gear reduction, take-off shaft, engine rotation, no clutch	225– 375	880	940	Klanx

Unless otherwise ordered, engine governor will be set for 1200 R. P. M.

FULLER & JOHNSON ENGINES

Model "AH" 4-6 H. P. Single Cylinder Industrial Engine

Model "AH" Engine equipped with Radiator Guard, Radiator Cover Lock.

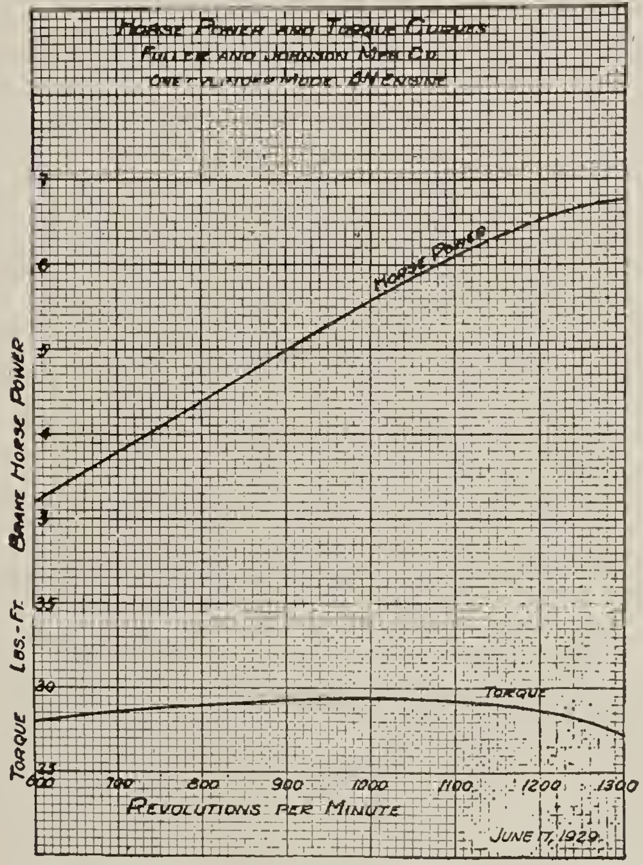


Model "AH" Engine equipped with 2 to 1 gear reduction.

Model "AH" Engine equipped with Enclosed Clutch and 8 to 1 Gear Reduction. Note Compactness.

Safe, Sure, Easy to Start

Cranking is **right hand** regardless of the direction of rotation of the power take-off. Cranking is easy because anti-friction Bearings support the crank shaft which reduces friction to the minimum. The high compression Ricardo Head is provided with a convenient priming cup.



It is these features and the hot spark produced by the magneto even at slow cranking speeds that guarantees a sure, quick start at all times.

Specifications of the Fuller & Johnson Model "AH" 4-6 H. P. Single Cylinder Industrial Engine

Motor—One cylinder, four cycle.

Power—4 to 6 H. P.

Speed—900-1300 R. P. M.

Rotation—Clockwise, facing flywheel of engine.

Bore and Stroke—3¾" x 4½".

Cylinder—Honed (polished) to insure a perfectly round, smooth straight bore.

Cylinder Head—Removable, Ricardo high compression "L" Type, with priming cup.

Piston—Cast iron—with 2 compression rings and 1 oil control ring.

Clutch—Fully enclosed dry disc type, mounted on main shaft, operated at engine speed.

Connecting Rod—Duralumin (light weight), drop forged.

Bearings—Upper end bronze bushing, lower end high tin Babbitt, spun in.

Crank Shaft—Carefully counterbalanced, heavy, rugged, mounted on oversize Timken Roller Bearings.

Fly Wheel—Heavy, accurately balanced, contributing to smooth running, easy starting.

Cam Shaft—Cams forged integral with shaft.

Tappets—Flat foot type valve lifter.

Ignition—High tension rotary magneto furnished with impulse starter.

Lubrication—Positive. Oil pump driven from eccentric on cam shaft. Oil supplied to all working parts of engine.

Cranking—Right Hand, regardless of direction of power take-off.

Cooling—Radiator with ample capacity for full load operation. Oversize fan with automatic fan belt tightener. Fan blades made of single steel stamping. Fan hub, mounted on ball bearings which can be lubricated while running.

Manifold—Hot Spot. Promotes perfect carburetion under all loads.

Oil Gauge—Bayonette type.

Speed Reduction Gears—Furnished for 2 to 1 and 8 to 1 reductions. Gears are of alloy steel heat treated and hardened. Special tooth designs and anti-friction bearings provide quiet running, and long life.

Lever Speed Changer—Furnished when ordered. Permits instant and convenient variation of governed speed of engine. A slow-down device for idling Engine at slow speed can also be furnished.

Governor—Gear driven, fly ball throttling type, enclosed, runs in oil and gives close speed regulation.

Fuel Tank—Liberal size. Made of heavy, lead coated terne plate (anti-rusting). Securely mounted in top of house.

House—Of heavy gauge steel. All joints riveted and welded. Wide doors on both sides. Can be equipped with radiator and fuel tank lock.

Dimensions—Length 17", width 18", height 34".

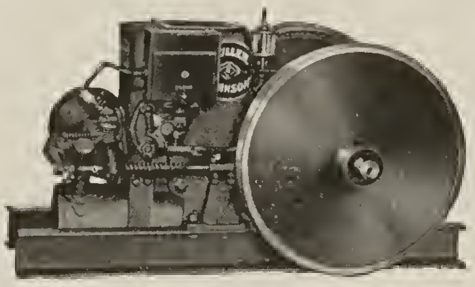
Order The Engine To Suit Your Requirements

Outfit Number	MODEL AH Standard Combinations	R. P. M. of Take-off Shaft	Net Weight	Approx. Shipping Weight	Code Word
271B	Direct Drive, power taken from crank shaft	900–1300	420	450	Aneh
271G	Direct Drive, with clutch	900–1300	475	515	Ansa
271K	2:1 gear reduction, engine rotation, with clutch	450– 650	496	550	Anko
271M	2:1 gear reduction, anti-engine rotation, with clutch	450– 650	496	550	Apoe
271L	2:1 gear reduction, engine rotation (no clutch)	450– 650	440	480	Anim
271N	2:1 gear reduction, anti-engine rotation (no clutch)	450– 650	440	480	Abna
271F	8:1 gear reduction, anti-engine rotation, Position "AA" with clutch	112– 168	530	600	Anbe
271P	8:1 gear reduction, anti-engine rotation, Position "CC" with clutch	112– 168	530	600	Aimo

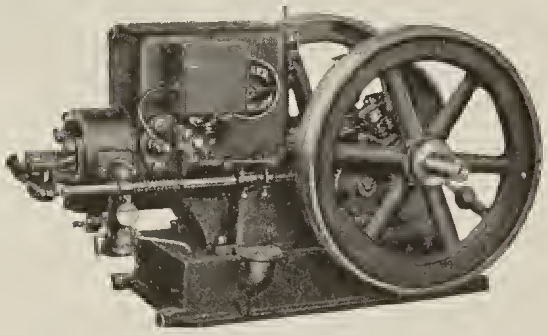
Unless otherwise ordered Engine Governor will be set for 1,000 R. P. M.

FULLER & JOHNSON ENGINES

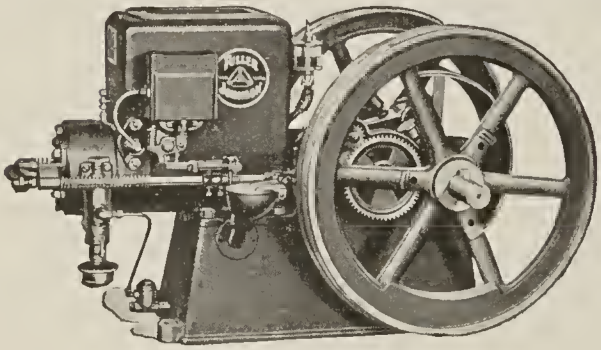
Models "NC" and "NB" Single Cylinder Horizontal Engines



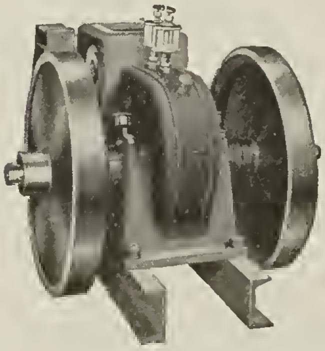
2 and 2½ H. P. on steel channels. Note the disc fly-wheels and key shroud.



3½ H. P. Model "NC"
Mounted on iron sub-base, water-cooled cylinder head.



4½-6-8 H. P. Model "NB"
With full iron base.



Showing crankcase enclosure and wipe oiler for crank pin on 2 H. P. Crankcase enclosure can be furnished on all "NC" and "NB" Engines.

Fuller & Johnson Models "NC" and "NB" Gasoline Engines embody the very latest improvements in gasoline engine construction. They are of the horizontal type, four cycle, hit and miss governor, and hopper cooled.

Cooling—Large, straight sided hopper with large waterways the full length of cylinder insures excellent cooling.

Lubrication—Main bearing and connecting rod bearings have large grease cups. Cylinder is lubricated by sight feed oil cup.

Governor—All Model "NC" and "NB" Engines are equipped with the hit and miss type. The number of explosions or power impulses is regulated by the load placed on the engine, that is, the fuel used is in proportion to the work or load on the engine. This is a very economical means of governing the engine's speed.

Ignition—High tension Wico magneto is standard equipment.

Piston—Long, light weight, of special grey iron. Machined and ground to exact size. Each piston is individually fitted to its cylinder before being bored for wrist pin, assuring perfect fit and alignment.

Cylinder—Semi-steel. Seasoned and ream finished. Carefully fitted with piston and rings and run in thoroughly on testing floor.

Bearings—High grade babbitt, line reamed. Fitted with metal shims. Main bearings on angle in the base so that pressure from power impulse on piston comes at bottom of bearing.

Gears—Semi-steel, accurately machined and cut to close limits. Timing gears marked to assure replacement in correct time if removed.

Guarantee—All Fuller & Johnson Models "NC" and "NB" engines are backed by our regular, published, five-year guarantee.

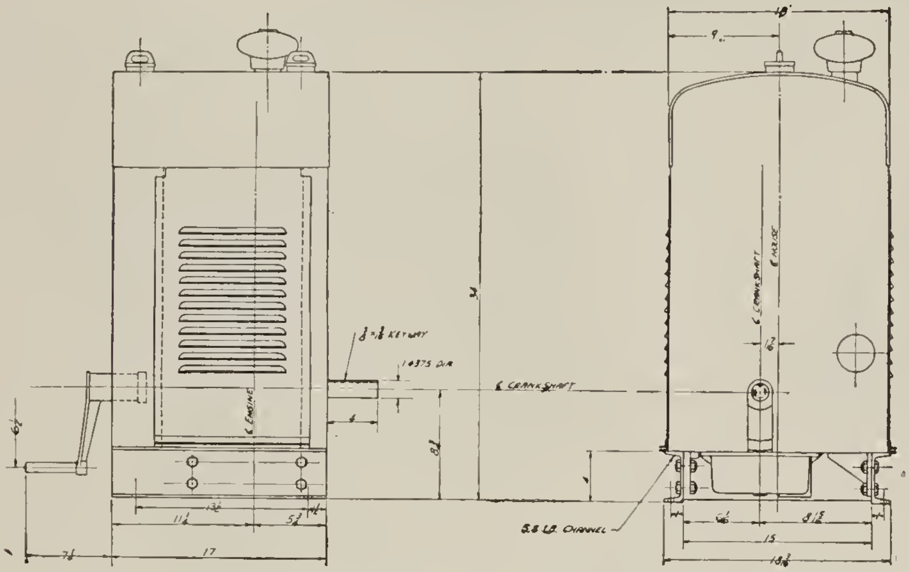
Equipment—The regular equipment consists of gasoline tank, plain pulley, muffler, cylinder oiler, grease cups, magneto, starter crank, and instruction book, all securely packed in one crate.

Rigidly Tested—After assembly, each engine is thoroughly run in on the test floor. It is then checked by the inspector for compression, ignition, valve setting, bearing adjustment, etc. After passing this test it is then brake tested for power. Each Fuller & Johnson engine must develop full rated horse-power. Finally as an extra protection to the user, just before it is crated for shipment, every engine must pass a final running test by an engine expert. This assures the owner that the engine is not only properly designed and built but, having been thoroughly tested and inspected before shipping, it is ready to put right to work.

H. P.	R.P.M.	Size Pulley	Diam. of Fly-wheels	Capacity of Fuel Tank (gals.)	Floor Space (inches)	Approx. Ship. Weight (Lbs.)	Code Word
2	600	4x4	15½"	.9	27x42	220	Vanao
2½	600	4x4	16½"	1.2	28x47	270	Veaso
3½	550	6x4	18"	2.25	34x36	335	Cepeo

H. P.	R.P.M. Speed	Standard Pulleys Inches	Diam. of Fly-wheels Inches	Capacity Fuel Tank U. S. Gals.	Floor Space Inches	Approx. Ship Weight Lbs.	Code Word
*4½	525	8x4	22	3	35x43	525	Conao
6	475	12x6	26	5¼	40x52	800	Bateo
8	425	16x8	32	6¼	44x63	1200	Bayao

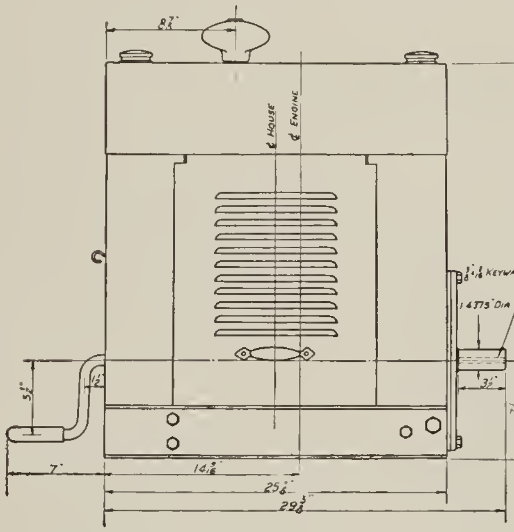
FULLER & JOHNSON ENGINES


℄ CRANKSHAFT
℄ ENGINE
KEYWAY
1.4375 DIA
5.8 LB. CHANNEL

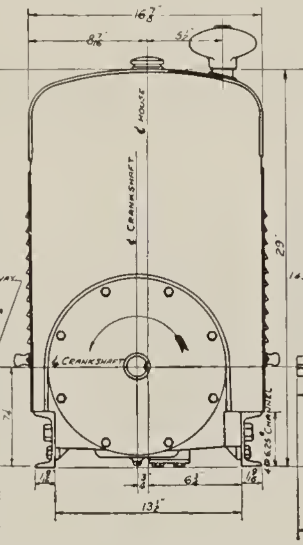
Model "AH" Direct Drive Engine

Dimensions of Model "AH" 4-6 H. P. Single Cylinder Vertical Engine

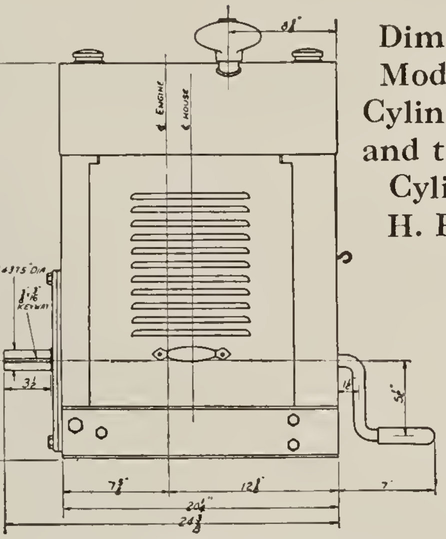
Detail dimensions of the power take-offs available on the Model "AH" Engine and all other sizes and types built will be furnished on request.


℄ HOUSE
℄ ENGINE
KEYWAY
1.4375 DIA

Model "BC"—6-10 H. P., 4-Cylinder Vertical Engine.


℄ HOUSE
℄ CRANKSHAFT
℄ CRANKSHAFT
CHANNEL

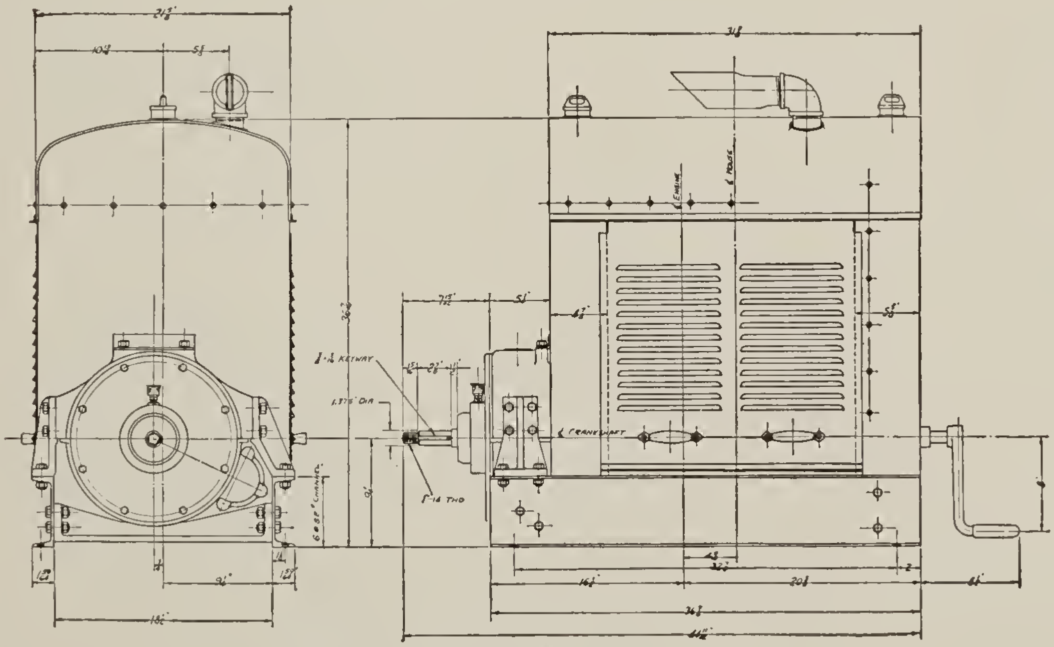
End dimensions of house on "BB" and "BCL" Engines are identical.


℄ ENGINE
℄ HOUSE
1.4375 DIA
KEYWAY

Model "BB"—3-5 H. P 2-Cylinder Vertical Engine.

Dimensions of Model "BB" 2 Cylinder 3-5 H. P. and the "BCL" 4 Cylinder 6-10 H. P. Engines

Note — That if "BC" engine has right hand accessories (right hand side when looking at radiator end) then center line of engine will be ¾" to the *right* of the center line of house instead of to the left as shown in dimension drawing.


KEYWAY
DIA
℄ CRANKSHAFT
℄ ENGINE
℄ HOUSE
CHANNEL

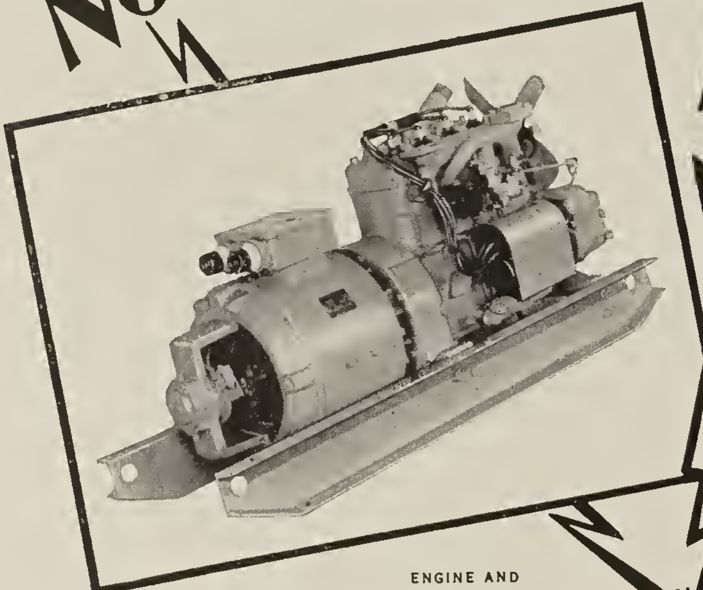
Models "AX" and "AXK" Direct Drive

Dimensions of "AX" 20-25 H. P. and "AXK" 25-30 H. P. 4 Cylinder Engines

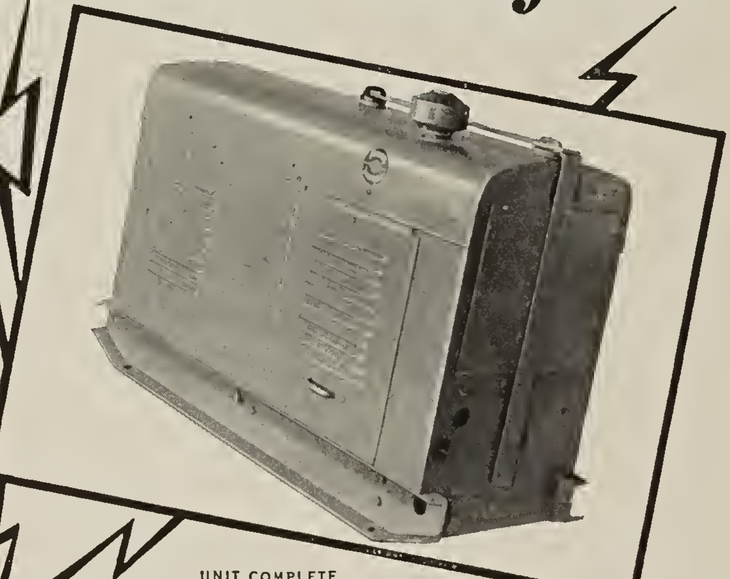
Detail dimensions of the power take-offs available on the Model "AX" and "AXK" Engines will be furnished on request.

FULLER & JOHNSON ENGINES

NOW You can use ELECTRIC POWER anywhere



ENGINE AND GENERATOR ASSEMBLY



UNIT COMPLETE WITH HOUSE

Take your POWER with you!

Contractors, as well as telephone, gas and electric utilities, have many applications on new construction or repair jobs where flood lights and portable electric tools can be used to advantage. The same electric tools—drills, reamers, hammers, saws, chisels, etc.—that come in so handy where the city current is available can now be used anywhere.

Unit Mounted on Auto Truck Equipped for Flood Lighting

The FULLER & JOHNSON portable electric power units make possible this convenience. They are surprisingly low in price and operating cost, yet built into them is that sturdy construction which for 30 years has characterized FULLER & JOHNSON engines.

The units are available in two standard sizes—$1\frac{1}{2}$ K. W. and 3 K. W. Read over the specifications given below.

$1\frac{1}{2}$ K. W. Unit
Specifications

MOTOR: Two cylinder, four cycle, 3-5 h. p. Fuller & Johnson.

SPEED: 1200 R. P. M.

IGNITION: High tension rotary magneto.

LUBRICATION: Circulating splash system.

CRANKING: Right hand.

COOLING: Thermo-syphon circulation, large radiator, 4 blade fan.

GOVERNOR: Gear driven, fly-ball throttling type, enclosed.

FUEL TANK: Liberal size, securely mounted in top of house.

HOUSE: Of heavy gauge steel. Wide doors on both sides and rear.

GENERATOR: $1\frac{1}{2}$ K. W. 115 volt D. C., compound wound. Direct connected to engine.

DIMENSIONS COMPLETE UNIT: Height 30"; width $20\frac{1}{2}$"; length $41\frac{1}{2}$".

WEIGHT COMPLETE UNIT: 650 pounds net

3 K. W. Unit
Specifications

MOTOR: Four cylinder, four cycle, 6-10 h. p. Fuller & Johnson.

SPEED: 1500 R. P. M.

IGNITION: High tension rotary magneto.

LUBRICATION: Circulating splash system.

CRANKING: Right hand.

COOLING: Thermo-syphon circulation, large radiator, 4 blade fan.

GOVERNOR: Gear driven, fly-ball throttling type, enclosed.

FUEL TANK: Liberal size, securely mounted in top of house.

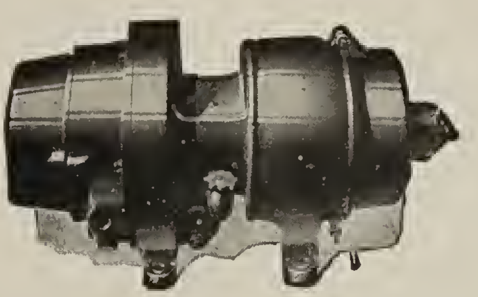
HOUSE: Of heavy gauge steel. Wide doors on both sides and rear.

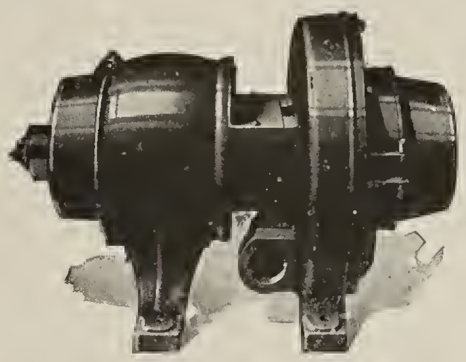
GENERATOR: 3 K. W., 115 volt D C., compound wound. Direct connected to engine.

DIMENSIONS COMPLETE UNIT: Height 30"; width $20\frac{1}{2}$"; length 49".

WEIGHT COMPLETE UNIT: 735 pounds net.

SUNBEAM TURBO-GENERATORS


Type RE. 3 Turbo-Generator


Type 5 H Turbo-Generator

Wherever steam is available and electric current is required within their range, Sunbeam Turbo-Generators will be found to be the most economical means of securing this electric service. They are easily installed, operate smoothly, and without vibration or noise. No expensive switchboard, with its costly instruments, is required. It is only necessary to connect the equipment to your steam boiler, install the wiring and fixtures, turn on the steam, and you have electric light in abundance.

Sunbeam Turbo-Generators are made to operate under the most severe conditions, and under a wide range of loads and boiler pressures. They are weather-proof, and no special precaution need be taken to protect them from the elements. The construction is so simple that any one can operate them. No particular mechanical or electrical knowledge is required.

Sunbeam Turbo-Generators have enjoyed a reputation for quality of workmanship, material and design, for many years. They are rugged in construction and give the best of service with minimum attention. The design is such that all parts are easy of access. A powerful, sensitive governor regulates the speed and voltage. These generators will operate through all practical ranges of boiler pressures. When ordering, the normal operating pressure range should be stated.

SUNBEAM HEADLIGHTS & FLOODLIGHTS

Type 4414

Sunbeam Locomotive Headlights are made in 12 to 18-inch diameter reflector sizes. The Glass Reflector Headlights are made in 12 and 14-inch size; Metal Reflector Headlights in 12, 14 and 18-inch size. Flood and Searchlights are made in 12-inch size only.

Bulletins describing in detail our very complete line of Headlights will be furnished on request.

Type 4414-A

Sunbeam Flood or Searchlight
Type 11212AC
(Old Type Number 11012AC)

LE ROI COMPANY

Milwaukee, Wisconsin

ONE CYLINDER MODELS

Model "R," one cylinder, 3 to 4 horsepower. Bore 3⅛"; Stroke 4½". Engine speed 900 to 1250 R.P.M.

This engine is built with either right or left hand accessories and in both hopper and radiator cooled styles.

* * *

Model "F," one cylinder, 4 to 5 horsepower. Bore 3½"; Stroke 4½". Engine speed 900 to 1250 R.P.M.

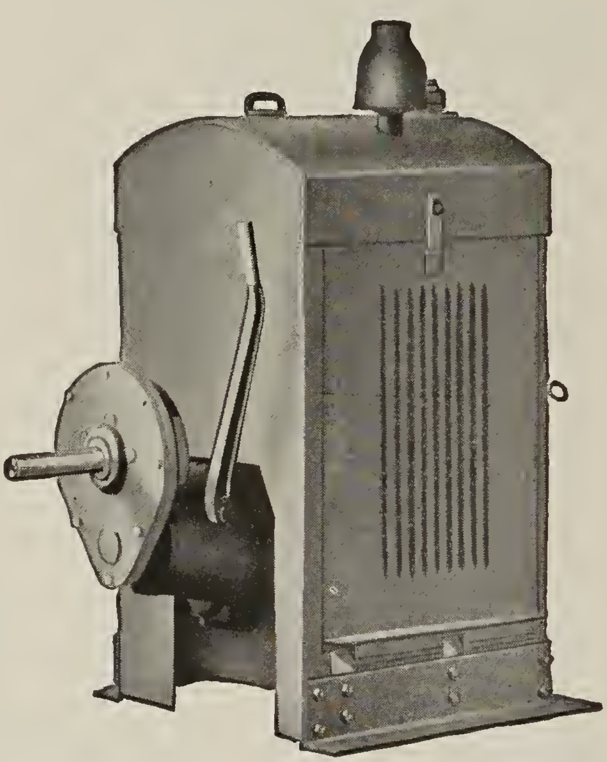
This engine is built with right hand accessories only and in both hopper and radiator cooled styles.

* * *

Any of the above engines can be furnished with 2 to 1 reduction with or without clutch with counter clockwise rotation of drive shaft.

The above engines with right hand accessories can be furnished with 2 to 1 reduction with or without clutch and with either rotation of drive shaft.

The above engines with right hand accessories can be furnished with clutch and 6.6 to 1 reduction, clockwise rotation; 8 to 1 reduction, either rotation; or 10.7 to 1 reduction, clockwise rotation.



Model "F," 1 cylinder 4-5 H.P., radiator cooled engine with clutch and 8 to 1 reduction in upper vertical position.

Engines can be furnished with drive shaft rotating at engine speed in either direction. Those which have shaft rotating in a counter clockwise direction can be equipped with clutch.

* * *

NOTE: Location of accessories is always determined by viewing engine from gear cover end.

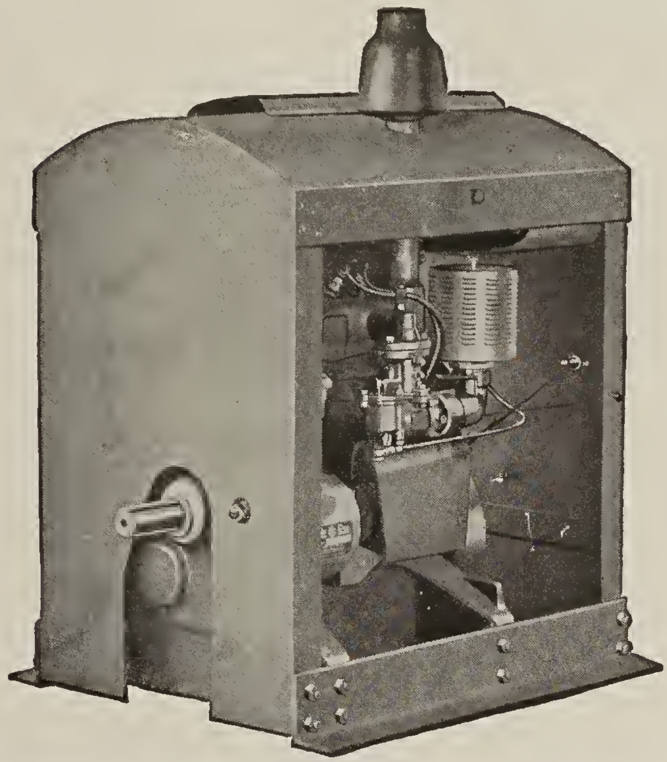
Direction of rotation is determined by looking at the end of the drive shaft.

Consult LE ROI *catalog for detailed information*

LE ROI ENGINES—FOR DEPENDABLE POWER

LE ROI COMPANY

Milwaukee, Wisconsin



Model "S," 2 cylinder 5-6 H.P., hopper cooled engine with 2 to 1 reduction.

TWO CYLINDER MODELS

Model "S," two cylinder, 5 to 6 horsepower. Bore 3⅛″; Stroke 4″. Engine speed 900 to 1250 R.P.M.

This engine is built with either right or left hand accessories and in both hopper and radiator cooled styles.

✓ ✓ ✓

Model "M," two cylinder, 6 to 8 horsepower. Bore 3⅛″; Stroke 4½″. Engine speed 900 to 1250 R.P.M.

This engine is built with either right or left hand accessories and in both hopper and radiator cooled styles.

✓ ✓ ✓

Model "T," two cylinder, 8 to 10 horsepower. Bore 3⅜″; Stroke 4½″. Engine speed 900 to 1250 R.P.M.

This engine is built with right hand accessories only and in both hopper and radiator cooled styles.

Any of the above engines can be furnished with 2 to 1 reduction with or without clutch with counter clockwise rotation of drive shaft.

The above engines with right hand accessories can be furnished with 2 to 1 reduction with or without clutch and with either rotation of drive shaft.

The model "S" and "M" engines which have right hand accessories can be furnished with clutch and 6.6 to 1 reduction, clockwise rotation; 8 to 1 reduction, either rotation; or 10.7 to 1 reduction, clockwise rotation. The model "T" engine, similarly equipped, can be furnished with the same reductions with the exception of the 6.6 to 1 reduction.

Engines can be furnished with drive shaft rotating at engine speed in either direction. Those which have shaft rotating in a counter clockwise direction can be equipped with clutch.

✓ ✓ ✓

NOTE: Location of accessories is always determined by viewing engine from gear cover end.

Direction of rotation is determined by looking at the end of the drive shaft.

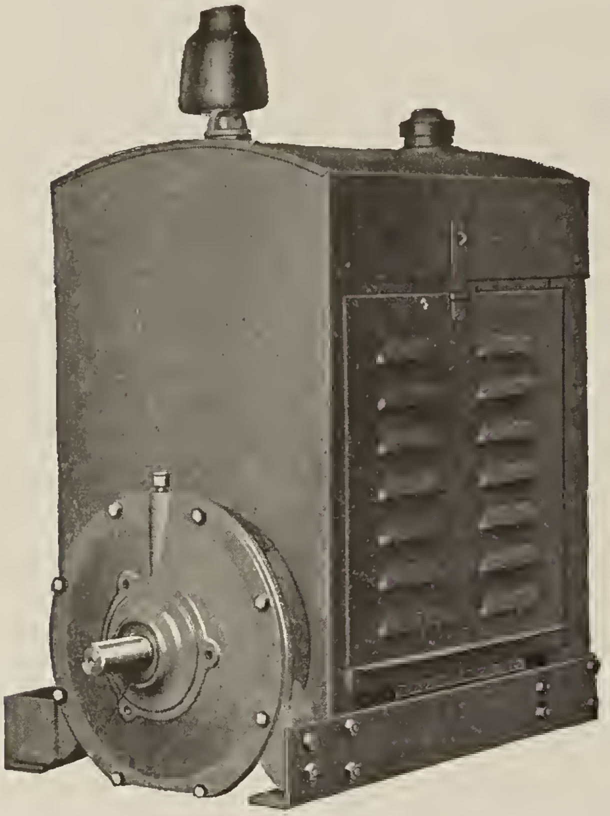
Model "T," 2 cylinder 8-10 H.P., radiator cooled engine.

Consult LE ROI *catalog for detailed information*

LE ROI ENGINES—FOR DEPENDABLE POWER

LE ROI COMPANY

Milwaukee, Wisconsin



Model "W," 4 cylinder 7-12 H.P., radiator cooled engine with engine speed drive shaft.

FOUR CYLINDER MODELS

Model "W," four cylinder, 7 to 12 horsepower. Bore 2¾″; Stroke 3½″. Engine speed 900 to 1600 R.P.M.

This engine is built with either right or left hand accessories and in the radiator cooled style only.

The model "W" is the latest addition to the LE ROI line and has been developed to meet the increasing demand for a small multiple cylinder engine.

This engine embodies the very latest features of gasoline engine design. It is fitted with deep groove ball bearings on both the crankshaft and camshaft thereby reducing friction to a minimum. It has a ball bearing fan, driven by an automotive type "V" belt which is practically trouble proof.

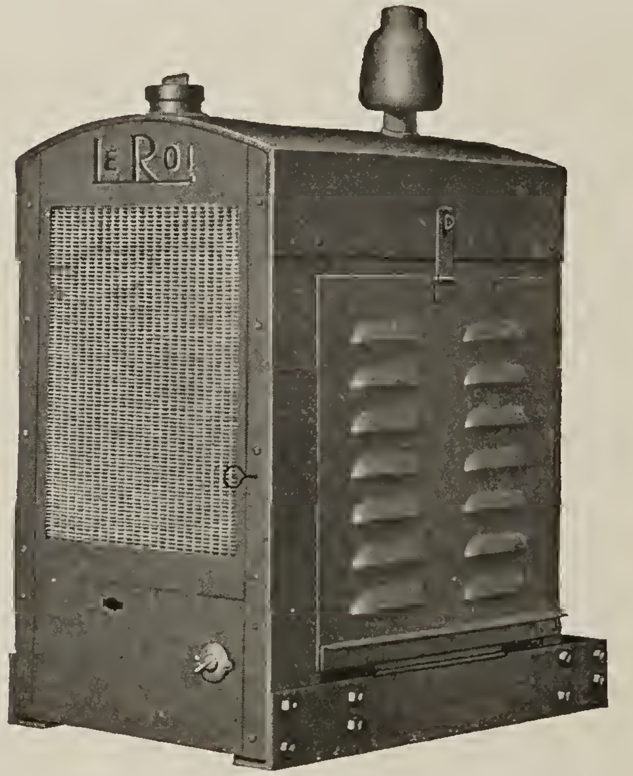
Lubrication is accomplished by means of the combination pump and splash system which has proven so satisfactory on the other LE ROI models. In addition, the oil pump is positively driven from the camshaft and is entirely independent of any spring action for its operation.

Although the model "W" develops several horsepower more than the model "M" it has about the same outside dimensions and in addition it is absolutely free from any visible vibration and has the easy starting qualities which are to be expected in a properly designed four cylinder engine.

The model "W" can be furnished either with or without clutch with drive shaft rotating at engine speed in a counter clockwise direction. It can also be furnished either with or without clutch with the following reductions: 2 to 1, 3 to 1, 8 to 1, and 12 to 1, clockwise rotation of driveshaft. 2.23 to 1, 2.73 to 1, 8.94 to 1, and 10.93 to 1, counter clockwise rotation of driveshaft.

NOTE: Location of accessories is always determined by viewing engine from gear cover end.

Direction of rotation is determined by looking at the end of the drive shaft.



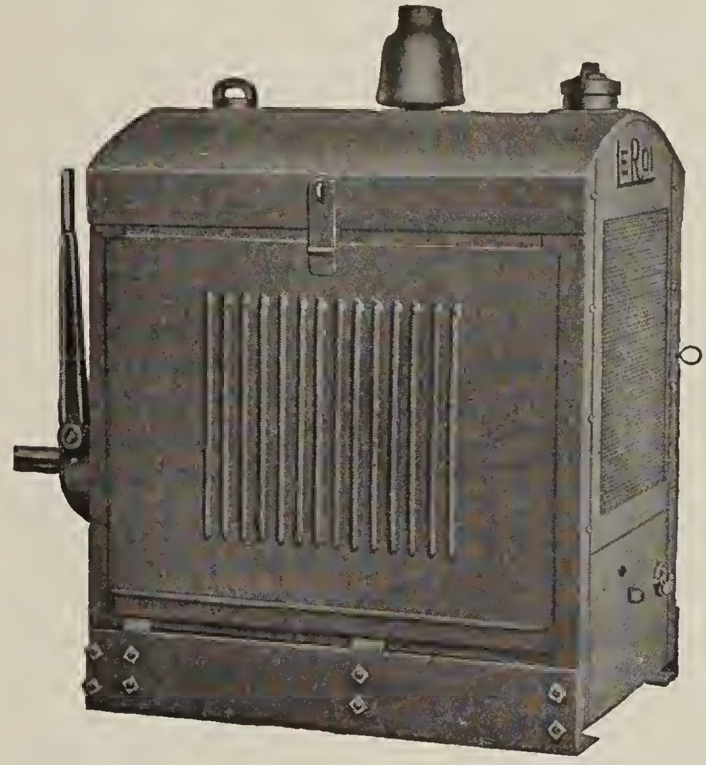
Model "W," 7-12 H.P., radiator cooled engine.

Consult LE ROI *catalog for detailed information*

LE ROI ENGINES—FOR DEPENDABLE POWER

LE ROI COMPANY

Milwaukee, Wisconsin



Model "K," 4 cylinder 10-12 H.P., radiator cooled engine with clutch and 2 to 1 reduction.

The model "K" and "CR" engines can be furnished with 2 to 1 reduction, with or without clutch and with either rotation of drive shaft.

They can also be furnished with clutch and 8 to 1 reduction, either rotation, or 10.7 to 1 reduction, clockwise rotation.

Engines can be furnished with drive shaft rotating at engine speed in either direction. Those which have shaft rotating in a counter clockwise direction can be equipped with clutch.

✓ ✓ ✓

NOTE: Location of accessories is always determined by viewing engine from gear cover end.

Direction of rotation is determined by looking at the end of the drive shaft.

FOUR CYLINDER MODELS

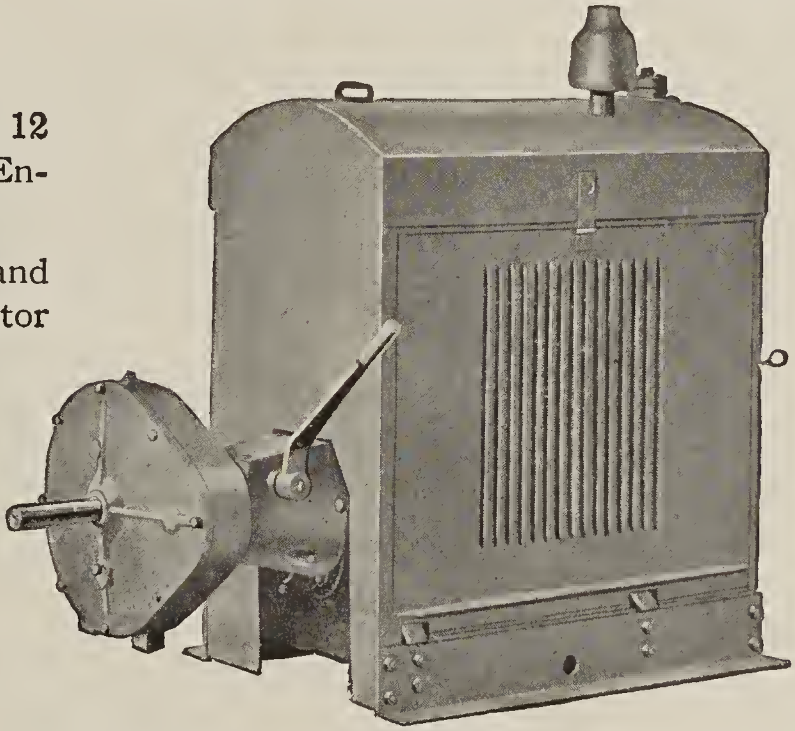
Model "K," four cylinder, 10 to 12 horsepower. Bore 2¾"; Stroke 4". Engine speed 900 to 1500 R.P.M.

This engine is built with right hand accessories only and in the radiator cooled style only.

✓ ✓ ✓

Model "CR," four cylinder, 12 to 15 horsepower. Bore 3⅛"; Stroke 4½". Engine speed 900 to 1250 R.P.M.

This engine is built with right hand accessories only and in the radiator cooled style only.



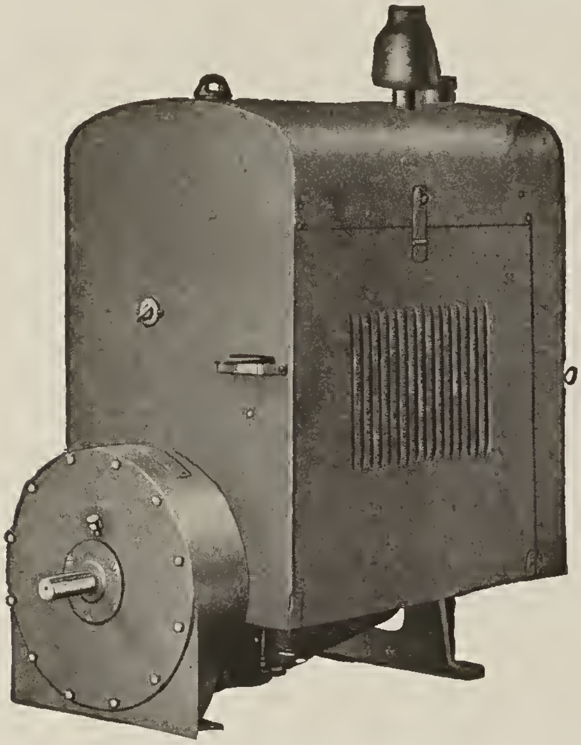
Model "CR," 4 cylinder 12-15 H.P., radiator cooled engine with clutch and 10.7 to 1 reduction in left center position.

Consult LE ROI *catalog for detailed information*

LE ROI ENGINES—FOR DEPENDABLE POWER

LE ROI COMPANY

Milwaukee, Wisconsin



Model "2877," 4 cylinder 15-20 H.P., radiator cooled engine with engine speed drive shaft.

FOUR CYLINDER MODELS

Model "2677," four cylinder, 10 to 12 horsepower. Bore 2¾"; Stroke 4". Engine speed 900 to 1500 R.P.M.

This engine is built with right hand accessories only and in the radiator cooled style only, similar to model "2877" shown in cut.

* * *

Model "2577," four cylinder, 12 to 15 horsepower. Bore 3⅛"; Stroke 4½". Engine speed 900 to 1250 R.P.M.

This engine is built with left hand accessories only and in the radiator cooled style only.

* * *

Model "2877," four cylinder, 15 to 20 horsepower. Bore 3⅜"; Stroke 4½". Engine speed 900 to 1250 R.P.M.

This engine is built with left hand accessories only and in the radiator cooled style only.

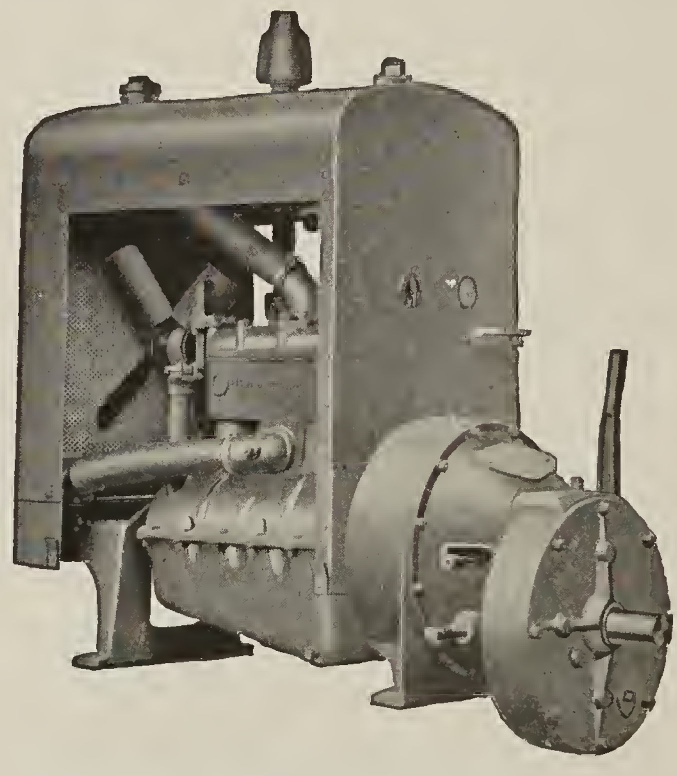
Models "2677," "2577" and "2877" can be furnished with engine speed drive shaft rotating in a counter clockwise direction either with or without clutch.

They can also be furnished with or without clutch with the following reductions: 4 to 1, either rotation; 2¼ to 1, clockwise rotation; and 3⅓ to 1, clockwise rotation.

* * *

NOTE: Location of accessories is always determined by viewing engine from gear cover end.

Direction of rotation is determined by looking at the end of the drive shaft.



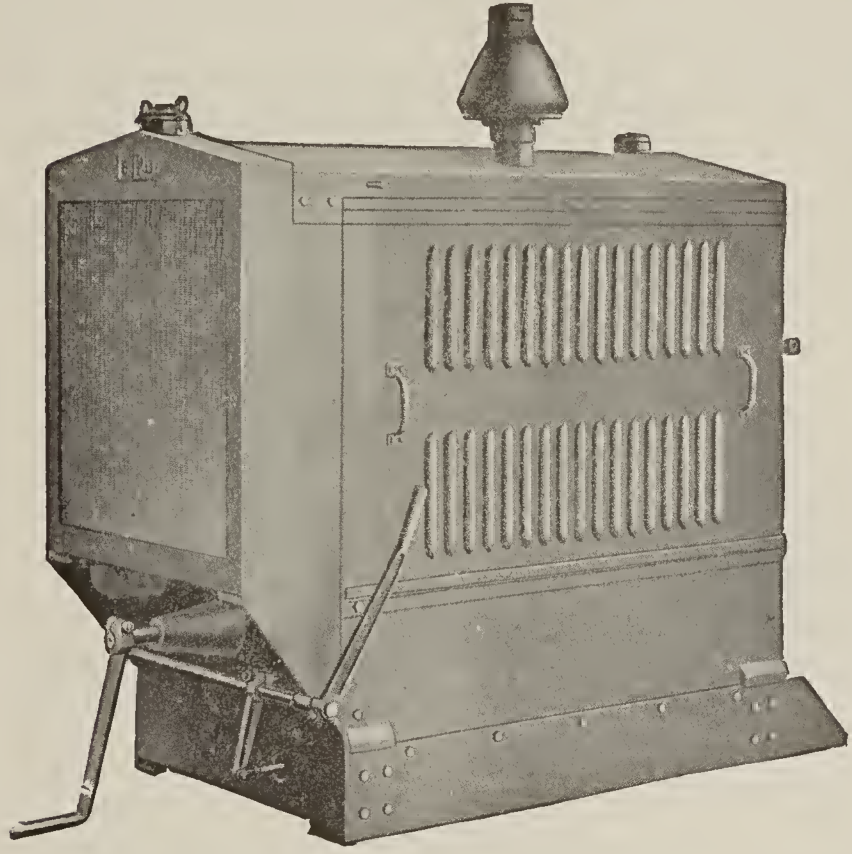
Model "2577," 4 cylinder 12-15 H.P., radiator cooled engine with 4 to 1 reduction in lower vertical position.

Consult LE ROI *catalog for detailed information*

LE ROI ENGINES—FOR DEPENDABLE POWER

LE ROI COMPANY

Milwaukee, Wisconsin



LE ROI VALVE-IN-HEAD POWER UNITS

Standard equipment on LeRoi Valve-in-Head Power Units includes:

High tension magneto and impulse coupling — Enclosed fly-ball type governor—Automotive type carburetor—Air cleaner—Fan and belt—Starting crank—Spark plugs—Ignition cables in conduit — Gasoline tank — Gasoline filter — Muffler — Clutch and power take-off.

The entire unit is mounted on an electrically welded structural steel base and fully enclosed in a durable steel housing.

The engine in these units is of the valve-in-head type, furnishing a maximum power with a minimum of fuel consumption. All engine bearings are force-feed lubricated. Cooling water is circulated by a gear driven centrifugal pump. Starter and generator can be furnished at slight extra cost and are recommended for engines of 100 H.P. and over.

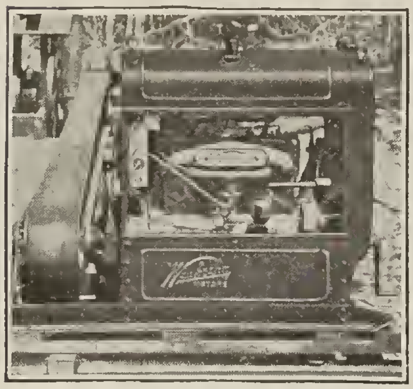
Power Unit Model	Cylinders	Bore and Stroke (Inches)	Horse Power	Engine Speed	Height Length Width (Inches)	Approx. Weight
J-1P	4	4¼x6	40	800-1200	57x 61x30	1700
JSP	6	4¼x6	55	800-1200	61x 78x37	3200
JA-1P	4	4½x6	45	800-1200	57x 61x30	1700
JASP	6	4½x6	65	800-1200	61x 78x37	3400
JM-1P	4	4¾x6	50	800-1200	57x 61x30	1700
JMSP	6	4¾x6	75	800-1200	61x 78x37	3600
RAP	4	5 x7	65	800-1200	57x 65x30	3100
RASP	6	5 x7	100	800-1200	61x 84x37	4000
RA-1P	4	5¼x7	70	800-1200	57x 65x30	3100
RA-1SP	6	5¼x7	105	800-1200	61x 84x37	4000
RA-2P	4	5½x7	80	800-1200	57x 65x30	3100
RA-2SP	6	5½x7	120	800-1200	61x 84x37	4000
RBP	4	6 x7	85	800-1200	61x 78x37	3200
RBSP	6	6 x7	130	800-1200	78x100x45	5800
RXP	4	6½x7	100	800-1200	61x 78x37	3200
RXSP	6	6½x7	140	800-1200	78x100x45	6000
RX-1P	4	6¾x7	110	800-1200	61x 78x37	3200
RX-1SP	6	6¾x7	170	800-1200	78x100x45	6000

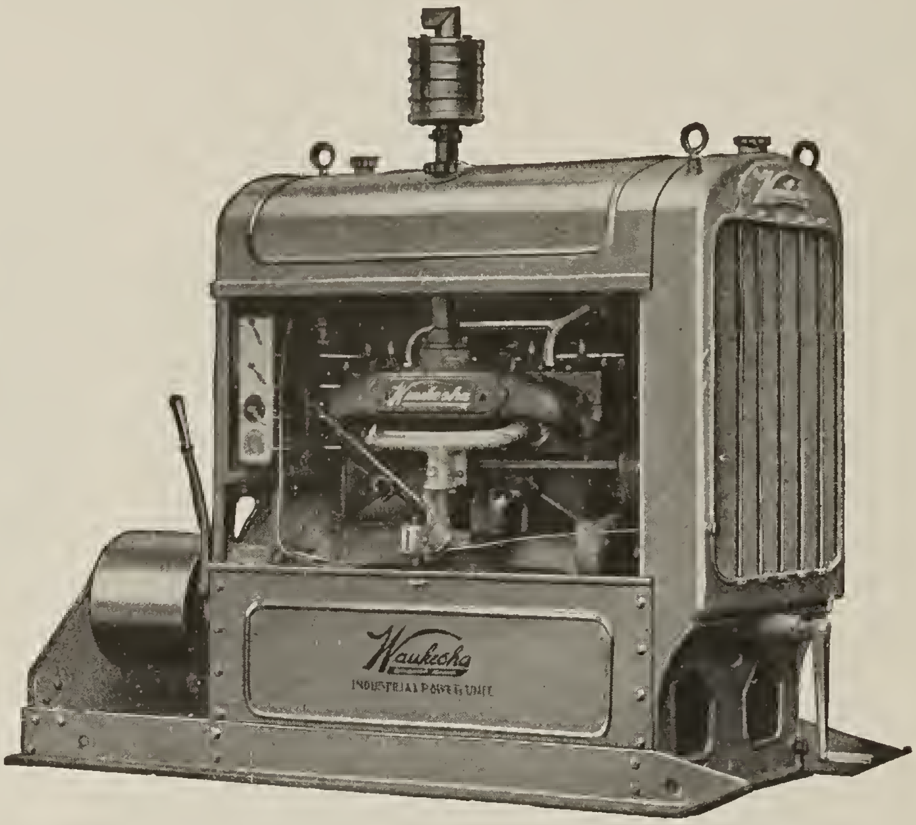
Detailed specifications covering engines used in the above Power Units will be sent on request. Kindly mention models in which you are interested.

Consult LE ROI *catalog for detailed information*

LE ROI ENGINES—FOR DEPENDABLE POWER

Waukesha Outboard-Bearing Unit





**Type 1
Single Pulley
Outboard
Bearing
Unit**

Standard Specifications

Engine—Waukesha "Ricardo Head," heavy-duty four-cylinder design.

Cooling—Radiator cooling system with water pump and V-belt driven fan.

Clutch—Dry plate clutch power take-off with single pulley and outboard support.

Controls—Instrument panel with spark, throttle and magneto controls.

Governor—Patented Waukesha design self-lubricated.

Ignition—Magneto with impulse coupling.

Fuel System—Gasoline carburetor and gasoline tank. (Fuel pump may be substituted for gasoline tank on Models HSL, HLL, JSL, JLL, JKL).

Air Cleaners—Standard equipment.

Lubrication—Full pressure lubrication; also scavenger oil pump is standard equipment on Models HSL and HLL; necessary where engines are operated on a forward angle. (Write Waukesha Motor Company for recommendations).

Housing—Sheet metal housing with sliding doors.

Muffler—Standard equipment on Models DRL, ERL, HSL, HLL.

Skid-base of structural steel.

Fuels—All Waukesha engines can be operated on kerosene, gasoline and artificial or natural gas (see extra accessories).

Starting—By hand crank (see extra accessories).

Extra Accessories (at additional cost)

Equipment for kersosene and artificial or natural gas fuel.

Waukesha Gaspower Mixer with Dial Cock—Models HSL, HLL, JSL, JLL, JKL, for operation on natural or artificial gas only.

Telegraph Throttle Control for remote control of engine.

Governor Accelerator for "cutting out" governor on unusual load and speed conditions.

Sliding Rails—For engine setting, which eliminates belt cutting.

Oil Filters—Models HSL, HLL, JSL, JLL, JKL.

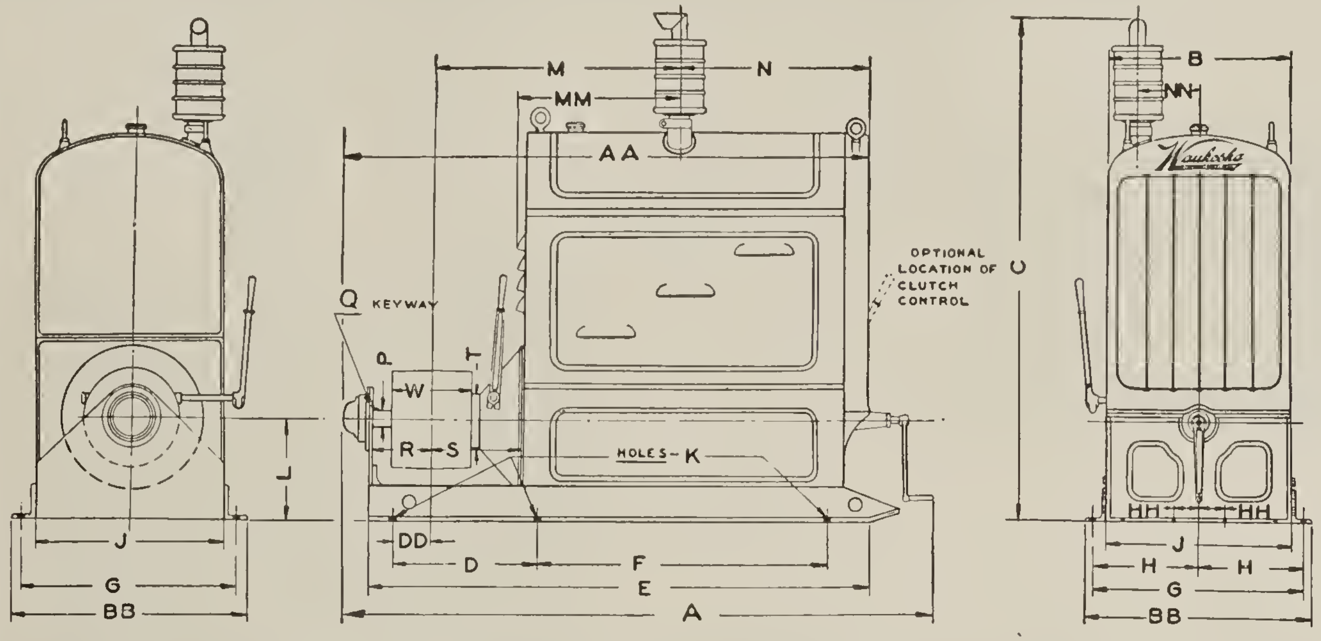
Muffler—Models JSL, JLL, JKL.

Scavenger Oil Pump—Models JSL, JLL, JKL.

Electric Starting Equipment—Six-volt with ammeter, Models DRL, ERL. Twelve-volt equipment, Models HSL, HLL, JSL, JLL, JKL. Storage battery not furnished.

Extra charge for domestic crating or export boxing. Storage battery for electric starting should be purchased locally.

Outboard Bearing Unit can also be supplied with two pulleys (see Bulletin No. 744).



Waukesha Outboard-Bearing Unit

	DRL	ERL	HSL	HLL	JSL	JLL	JKL
Hp. rating	40	50	60	75	70	80	90
Governed speed (continuous)	1100	1050	1050	1050	950	950	950
Governed speed (intermittent)	1300	1200	1200	1200	1050	1050	1050
Bore (inches)	4½	5	5½	6	5½	6	6½
Stroke (inches)	6¼	6¼	6½	6½	7	7	7
Standard flywheel housing	No. 1 S.A.E.	No. 1 S.A.E.	No. 1 S.A.E.	No. 1 S.A.E.	No. 0 S.A.E.	No. 0 S.A.E.	No. 0 S.A.E.
Oiling system, capacity in gallons	2¼	2½	3¼	3¼	3	3	3¼
Fuel system in gallons	22	22	22	22	28	28	28
Cooling system, capacity in gallons	15	15	17½	17½	25	25	25
Net weight (lbs.)	2350	2450	2970	3000	3925	3925	3940
Net weight boxed for export (lbs.)	3130	3300	3820	3850	4995	4995	5010
Export Dimensions:							
Length	7′-0″	7′-6″	7′-6″	7′-6″	8′-6″	8′-6″	8′-6″
Width	3′-6″	3′-6″	3′-6″	3′-6″	4′-0″	4′-0″	4′-0″
Height	5′-4″	5′-4″	5′-4″	5′-4″	5′-3″	5′-3″	5′-3″
Cubical contents (cu. ft.)	130	144	144	144	178	178	178

DIMENSIONS FOR INSTALLING

Model	RATED H. P.	OVERALL					FOUNDATION								
		A	AA	B	BB	C	D	DD	E	F	G	H	HH	J	K
DRL	40	7-1¼	6-5⅛	2-8	2-11⅛	5-10	0-21⅞	4⅛	6-0¼	3-3	2-8⅛	16 1/16	23	2-4⅛	1 1/16
ERL	50	7-5¼	7-1⅛	2-8	2-11⅛	5-10	0-21⅞	4⅛	6-4¼	3-7	2-8⅛	16 1/16	23	2-4⅛	1 1/16
HSL	60	7-5¼	7-1⅛	2-8	2-11⅛	5-10	0-21⅞	4⅛	6-4¼	3-7	2-8⅛	16 1/16	23	2-4⅛	1 1/16
HLL	75	7-5¼	7-1⅛	2-8	2-11⅛	5-10	0-21⅞	4⅛	6-4¼	3-7	2-8⅛	16 1/16	23	2-4⅛	1 1/16
JSL	70	8-4¼	7-8⅛	3-0	3- 4⅛	5- 8½	2- 1½	4⅛	7-3½	4-1¼	3-0⅝	18 5/16	13	2-8⅛	1 1/16
JLL	80	8-4¼	7-8⅛	3-0	3- 4⅛	5- 8½	2- 1½	4⅛	7-3½	4-1¼	3-0⅝	18 5/16	13	2-8⅛	1 1/16
JKL	90	8-4¼	7-8⅛	3-0	3- 4⅛	5- 8½	2- 1½	4⅛	7-3½	4-1¼	3-0⅝	18 5/16	13	2-8⅛	1 1/16

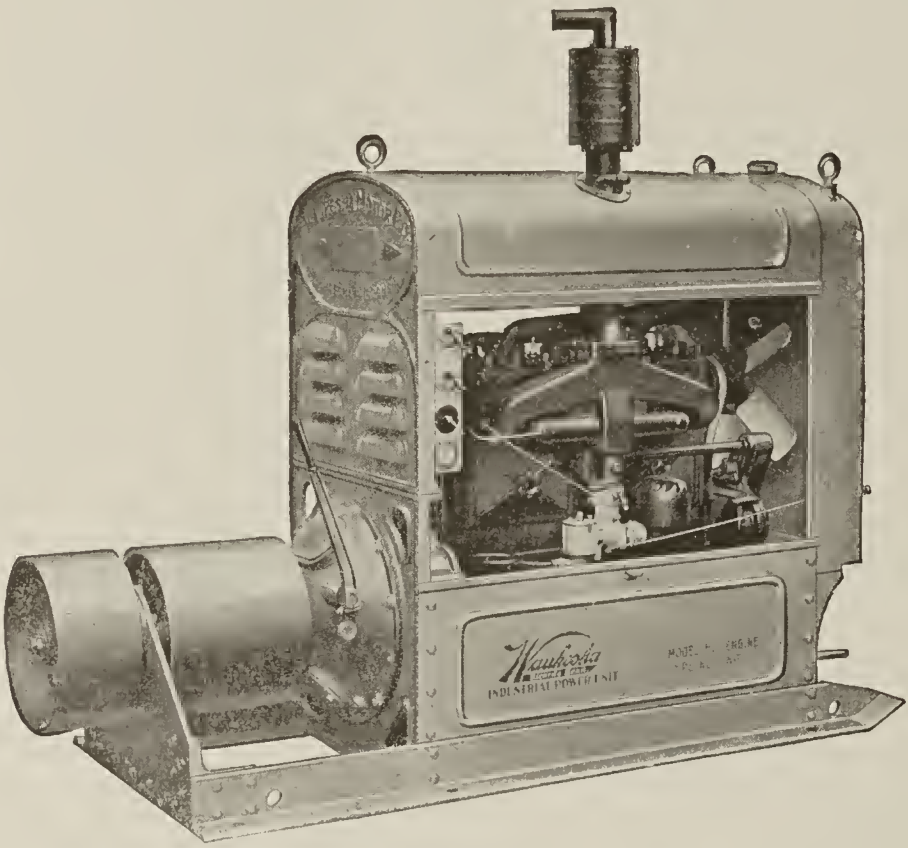
Model	SHAFT AND DETAILS					
	L	M	MM	N	NN	Keyway Q
DRL	14¾	3-0½	0-23	2- 4 5/16	10⅞	¾ x ¼
ERL	14¾	3-2½	2- 1	2-10 5/16	9 5/16	¾ x ¼
HSL	14¾	3-2½	2- 1	2-10 5/16	9 5/16	¾ x ¼
HLL	14¾	3-2½	2- 1	2-10 5/16	9 5/16	¾ x ¼
JSL	17	3-8	2- 1½	2-11⅝	11 3/16	¾ x ¼
JLL	17	3-8	2- 1½	2-11⅝	11 3/16	¾ x ¼
JKL	17	3-8	2- 1½	2-11⅝	11 3/16	¾ x ¼

WAUKESHA MOTOR COMPANY

NEW YORK WAUKESHA, WISCONSIN SAN FRANCISCO

Exclusive Builders of Heavy-Duty Gas Engines for Over Twenty Years

Waukesha Outboard-Bearing Unit



Type 2
Double Pulley
Outboard
Bearing
Unit

Standard Specifications

Engine—Waukesha "Ricardo Head," heavy-duty four-cylinder design.

Cooling—Radiator cooling system with water pump and V-belt driven fan.

Clutch—Dry plate clutch power take-off with two pulleys and outboard support.

Controls—Instrument panel with spark, throttle and magneto controls.

Governor—Patented Waukesha design, self-lubricated.

Ignition—Magneto with impulse coupling.

Fuel System—Gasoline carburetor and gasoline tank. (Fuel pump may be substituted for gasoline tank on Models HSL, HLL, JSL, JLL, JKL).

Air Cleaners—Standard equipment.

Lubrication—Full pressure lubrication; also scavenger oil pump is standard equipment on Models HSL and HLL; necessary where engines are operated on a forward angle. (Write Waukesha Motor Company for recommendations).

Housing—Sheet metal housing with sliding doors.

Muffler—Models DRL, ERL, HSL, HLL.

Skid-base of structural steel.

Fuels—All Waukesha engines can be operated on kerosene, gasoline and artificial or natural gas. (See extra accessories).

Starting—By hand crank. (See extra accessories).

Extra Accessories (at additional cost)

Equipment for kerosene, artificial gas or natural gas fuel.

Waukesha Gaspower Mixer with Dial Cock—Models HSL, HLL, JSL, JLL, JKL—for operation on natural gas only.

Telegraph Throttle Control for remote control of engine.

Governor Accelerator for "cutting out" governor on unusual load and speed conditions.

Sliding Rails—For engine setting which eliminates belt cutting.

Oil Filters—Models HSL, HLL, JSL, JLL, JKL.

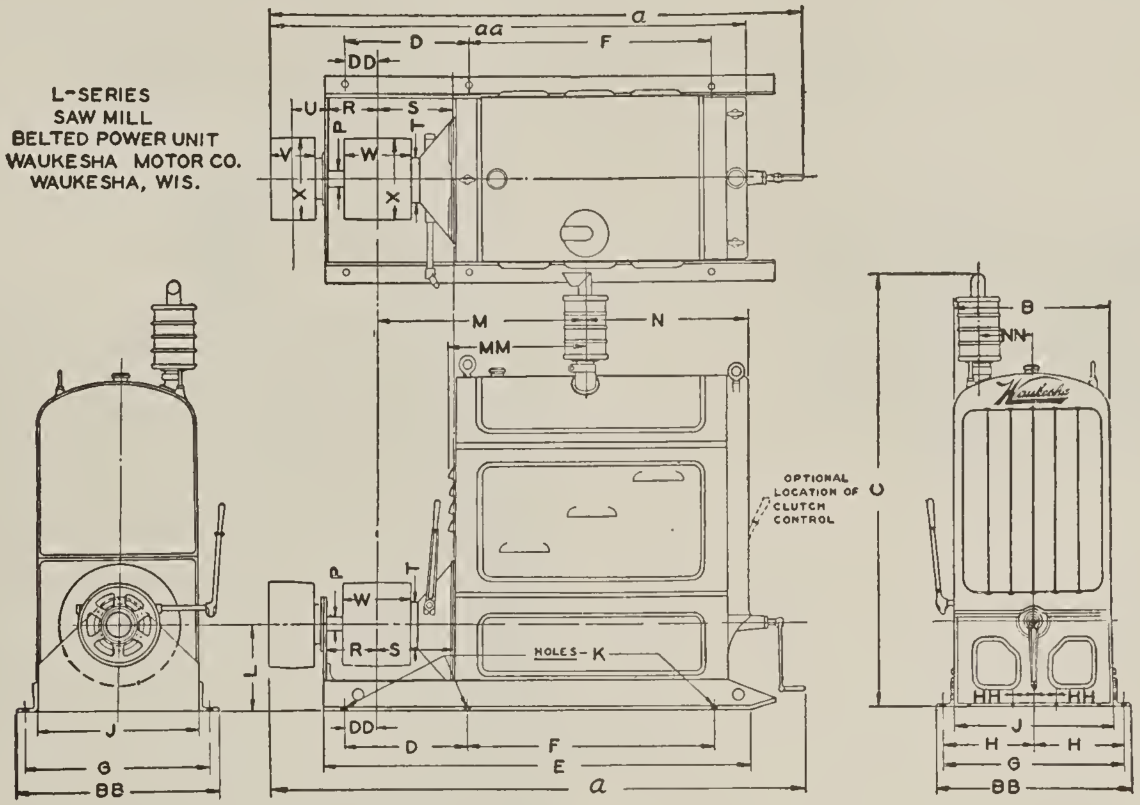
Muffler—Models JSL, JLL, JKL.

Scavenger Oil Pump—Models JSL, JLL, JKL.

Electric Starting Equipment—Six-volt with ammeter, Models DRL, ERL. Twelve-volt equipment, Models HSL, HLL, JSL, JLL. Storage battery not furnished.

Extra charge for domestic crating or export boxing. Storage battery for electric starting should be purchased locally. Foundation bolts not furnished.

Also available with Single Pulley (see Bulletin No. 743).



Waukesha Outboard-Bearing Unit

	DRL	ERL	HSL	HLL	JSL	JLL	JKL
Hp. rating	40	50	60	75	70	80	90
Governed speed (continuous)	1100	1050	1050	1050	950	950	950
Governed speed (intermittent)	1300	1200	1200	1200	1050	1050	1050
Bore (inches)	4½	5	5½	6	5½	6	6½
Stroke (inches)	6¼	6¼	6½	6½	7	7	7
Standard flywheel housing	No. 1 S.A.E.	No. 1 S.A.E.	No. 1 S.A.E.	No. 1 S.A.E.	No. 0 S.A.E.	No. 0 S.A.E.	No. 0 S.A.E.
Oiling system, capacity in gallons	2¼	2½	3¼	3¼	3	3	3¼
Fuel system in gallons	22	22	22	22	28	28	28
Cooling system, capacity in gallons	15	15	17½	17½	25	25	25
Net weight (lbs.)	2410	2505	3050	3100	4200	4210	4235
Net weight boxed for export (lbs.)	3290	3395	3930	3980	5330	5340	5365
Export Dimensions:							
Length	7′-6″	8′-0″	8′-0″	8′-0″	9′-0″	9′-0″	9′-0″
Width	3′-6″	3′-6″	3′-6″	3′-6″	4′-0″	4′-0″	4′-0″
Height	5′-4″	5′-4″	5′-4″	5′-4″	5′-3″	5′-3″	5′-3″
Cubical contents (cu. ft.)	148	148	148	148	189	189	189

DIMENSIONS FOR INSTALLING

MODELS	RATED HP.	OVERALL					FOUNDATION								
		B	BB	C	a	aa	D	DD	E	F	G	H	HH	J	K
DRL	40	2-8	2-11⅛	5-10	7- 7	6-10⅞	0-21⅞	4⅛	6-0¼	3-3	2-8⅛	16 1/16	23	2-4⅛	1 1/16
ERL	50	2-8	2-11⅛	5-10	7-11	7- 6⅞	0-21⅞	4⅛	6-4¼	3-7	2-8⅛	16 1/16	23	2-4⅛	1 1/16
HSL	60	2-8	2-11⅛	5-10	7-11	7- 6⅞	0-21⅞	4⅛	6-4¼	3-7	2-8⅛	16 1/16	23	2-4⅛	1 1/16
HLL	75	2-8	2-11⅛	5-10	7-11	7- 6⅞	0-21⅞	4⅛	6-4¼	3-7	2-8⅛	16 1/16	23	2-4⅛	1 1/16
JSL	70	3-0	3- 4⅛	5- 8½	8-10⅛	8- 2	2- 1½	4⅛	7-3½	4-1¼	3-0⅝	18 5/16	13	2-8⅛	1 1/16
JLL	80	3-0	3- 4⅛	5- 8½	8-10⅛	8- 2	2- 1½	4⅛	7-3½	4-1¼	3-0⅝	18 5/16	13	2-8⅛	1 1/16
JKL	90	3-0	3- 4⅛	5- 8½	8-10⅛	8- 2	2- 1½	4⅛	7-3½	4-1¼	3-0⅝	18 5/16	13	2-8⅛	1 1/16

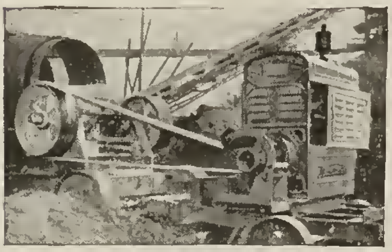
MODELS	SHAFT AND DETAILS													
	L	M	MM	N	NN	P	Keyway Q	R	S	T	U	V	W	X
DRL	14¾	3-0½	0-23	2- 4 5/16	10⅞	2 7/16	¾ x ¼	7⅜	14 15/16	12	6¼	8	12	14
ERL	14¾	3-2½	2- 1	2-10 5/16	9 5/16	2 7/16	¾ x ¼	7⅜	14 15/16	12	6¼	8	12	14
HSL	14¾	3-2½	2- 1	2-10 5/16	9 5/16	2 7/16	¾ x ¼	7⅞	14 15/16	12	6¼	8	12	14
HLL	14¾	3-2½	2- 1	2-10 5/16	9 5/16	2 7/16	¾ x ¼	7⅜	14 15/16	12	6¼	8	12	14
JSL	17	3-8	2- 1½	2-11⅝	11 3/16	2 7/16	¾ x ¼	7⅜	18 9/16	13	6⅜	8	12	14
JLL	17	3-8	2- 1½	2-11⅝	11 3/16	2 7/16	¾ x ¼	7⅜	18 9/16	13	6⅜	8	12	14
JKL	17	3-8	2- 1½	2-11⅝	11 3/16	2 7/16	¾ x ¼	7⅜	18 9/16	13	6⅜	8	12	14

WAUKESHA MOTOR COMPANY

NEW YORK WAUKESHA, WISCONSIN SAN FRANCISCO

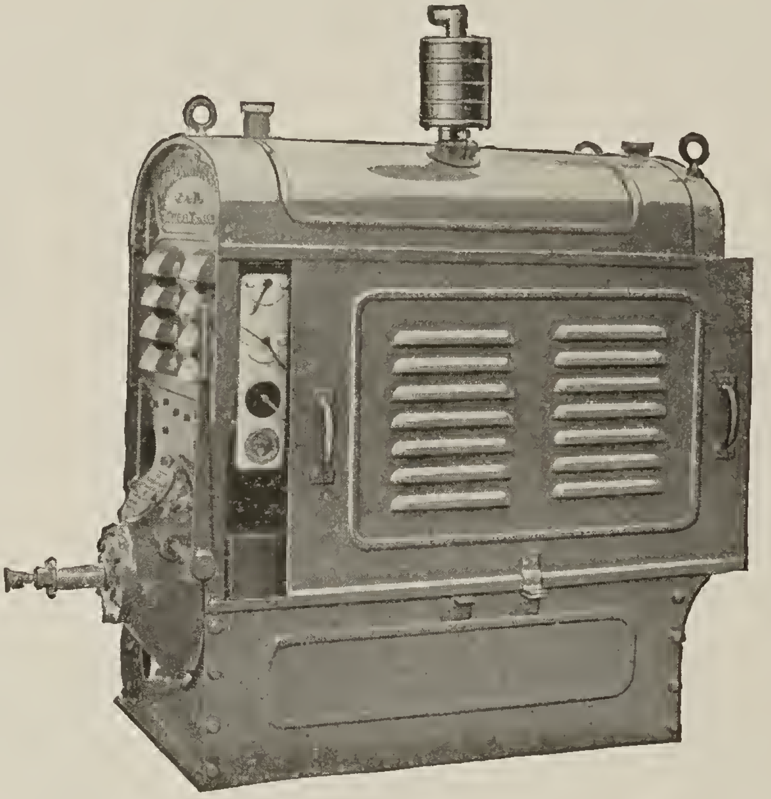
Exclusive Builders of Heavy-Duty Gas Engines for Over Twenty Years

Waukesha Industrial Power Units



L-Series with Clutch Power Take-Off

(Waukesha)



Standard Specifications

Engine—Waukesha "Ricardo Head," heavy-duty four-cylinder design.

Cooling—Radiator cooling system with water pump and V-belt driven fan. (All models except VL, which is thermo-syphon cooled).

Clutch—Waukesha Clutch Power Take-Off.

Controls—Instrument panel with spark, throttle and magneto controls.

Governor—Patented Waukesha design, self-lubricated.

Ignition—Magneto with impulse coupling.

Fuel System—Gasoline carburetor and gasoline tank. (Fuel pump may be substituted for gasoline tank on Models HSL, HLL, JSL, JLL).

Air Cleaners—Standard equipment.

Lubrication—Full pressure lubrication. Scavenger oil pump is standard equipment on Models HSL and HLL and is necessary where engines are operated on a forward angle. (Write Waukesha Motor Company for recommendations).

Housing—Sheet metal housing with sliding doors.

Muffler—Models VL, DRL, ERL, HSL, HLL.

Fuels--All Waukesha engines can be operated on kerosene, gasoline and artificial or natural gas. (See extra accessories).

Starting—By hand crank (see extra accessories).

Extra Accessories (at additional cost)

Equipment for kerosene, artificial gas or natural gas fuel.

Waukesha Gaspower Mixer with Dial Cock—Models HSL, HLL, JSL, JLL, JKL, for operation on natural gas only.

Telegraph Throttle Control for remote control of engine.

Sliding Rails—For quick and easy servicing of power drive.

Oil Filters—Models HSL, HLL, JSL, JLL, JKL.

Governor Accelerator for "cutting out" governor on unusual load and speed conditions, all models except VL.

Muffler—Models JSL, JLL, JKL.

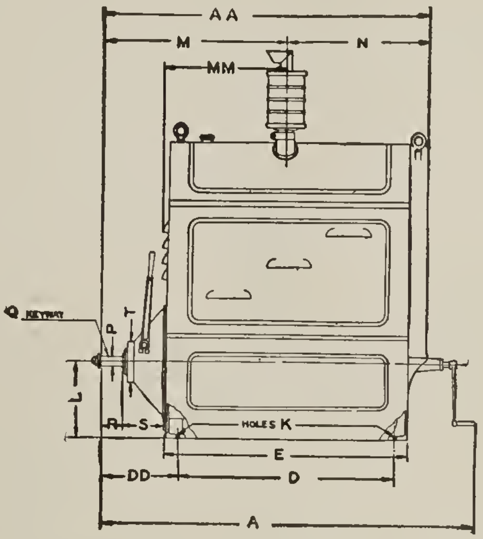
Electric Starting Equipment—Six-volt with ammeter, Models VL, DRL, ERL. Twelve-volt equipment, Models HSL, HLL, JSL, JLL, JKL. Storage battery not furnished.

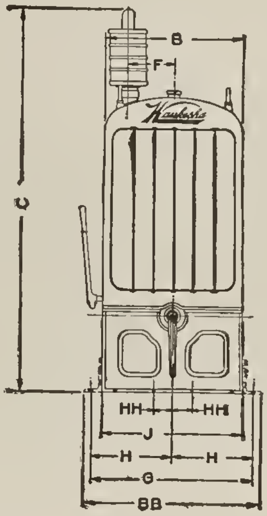
Scavenger Oil Pump—Models JSL, JLL, JKL.

Water Pump—Model VL.

Extra charge for domestic crating or export boxing. Pulleys for use with Waukesha engines and storage battery for electric starting should be purchased locally. Foundation bolts are not furnished.

Also available with Reduction Gear (see Bulletin No. 750) and with Stub Shaft (see Bulletin No. 751).





Waukesha Industrial Power Units

with Waukesha Clutch Power Take-Off

(Also Available with Twin Disc Clutch Power Take-Off, see Bulletin No. 749)

	VL	DRL	ERL	HSL	HLL	JSL	JLL	JKL
Hp. rating	35	40	50	60	75	70	80	90
Governed speed (continuous)	1400	1100	1050	1050	1050	950	950	950
Governed speed (intermittent)	1650	1300	1200	1200	1200	1050	1050	1050
Bore (inches)	4	4½	5	5½	6	5½	6	6½
Stroke (inches)	5	6¼	6¼	6½	6½	7	7	7
Displacement (cu. in.)	251	398	491	618	735	665	792	929
Standard flywheel housing	No. 3 S.A.E.	No. 1 S.A.E.	No. 1 S.A.E.	No. 1 S.A.E.	No. 1 S.A.E.	No. 0 S.A.E.	No. 0 S.A.E.	No. 0 S A.E.
Fuel system, capacity in gallons	11	22	22	22	22	28	28	28
Oiling system, capacity in gallons	1¾	2¼	2½	3¼	3¼	3	3	3¼
Cooling system, capacity in gallons	9½	15	15	17½	17½	25	25	25
Approx. weight with power take-off	1280	2035	2125	2645	2670	3675	3690	3715
Weight of crating (lbs.)	140	175	175	200	200	200	200	200
Net weight boxed for export (lbs.)	1670	2638	2781	3301	3386	4526	4541	4566
Export Dimensions:								
Length	5′-0″	6′-0″	6′-3″	6′-3″	6′-3″	7′-6″	7′-6″	7′-6″
Width	3′-0″	3′-4″	3′-4″	3′-4″	3′-4″	3′-8″	3′-8″	3′-8″
Depth	5′-0″	5′-4″	5′-4″	5′-3″	5′-4″	5′-3″	5′-3″	5′-3″
Cubical contents (cu. ft.)	75	105	109	109	109	144	144	144

DIMENSIONS FOR INSTALLING

MODELS	RATED HP.	OVERALL					FOUNDATION						
		A	AA	B	BB	C	DD	E	G	H	HH	J	K
VL	35	5- 0⅝	4- 4¼	2-4	2-0½	5- 0	8⅝	3-3⁹⁄₁₆	19	9½	4	2-0½	²¹⁄₃₂
DRL	40	5-10⅞	5- 2¾	2-8	2-5⅛	5-10	15²³⁄₃₂	3-8⁵⁄₁₆	23	11½	4	2-4	²⁵⁄₃₂
ERL	50	6- 2⅞	5-10¾	2-8	2-5⅛	5-10	15²³⁄₃₂	4-0⁵⁄₁₆	23	11½	4	2-4	²⁵⁄₃₂
HSL	60	6- 2⅞	5-10¾	2-8	2-5⅛	5-10	15²³⁄₃₂	4-0⁵⁄₁₆	23	11½	4	2-4	²⁵⁄₃₂
HLL	75	6- 2⅞	5-10¾	2-8	2-5⅛	5-10	15²³⁄₃₂	4-0⁵⁄₁₆	23	11½	4	2-4	²⁵⁄₃₂
JSL	70	7- 5¾	6- 9⅝	3-0	2-8	5- 8½	22⁵⁄₁₆	4-6³⁄₁₆	....	....	13	2-8	¹⁵⁄₁₆
JLL	80	7- 5¾	6- 9⅝	3-0	2-8	5- 8½	22⁵⁄₁₆	4-6³⁄₁₆	....	....	13	2-8	¹⁵⁄₁₆
JKL	90	7- 5¾	6- 9⅝	3-0	2-8	5- 8½	22⁵⁄₁₆	4-6³⁄₁₆	....	....	13	2-8	¹⁵⁄₁₆

MODELS	SHAFT AND DETAILS									
	F	L	M	MM	N	P	Keyway Q	R	S	T
VL	7⁷⁄₁₆	13	2- 4⁵⁄₁₆	0-20⅛	0-23¹⁵⁄₁₆	1¹⁵⁄₁₆	⅜ x ³⁄₁₆	3⅞	5⅝	6½
DRL	10⅞	14¾	2-10⁷⁄₁₆	0-23	2- 4⁵⁄₁₆	2³⁄₁₆	⅜ x ³⁄₁₆	4¹³⁄₃₂	8½	12
ERL	9⁵⁄₁₆	14¾	3- 0⁷⁄₁₆	2- 1	2-10⁵⁄₁₆	2³⁄₁₆	⅜ x ³⁄₁₆	4¹³⁄₃₂	8½	12
HSL	9⁵⁄₁₆	14¾	3- 0⁷⁄₁₆	2- 1	2-10⁵⁄₁₆	2³⁄₁₆	⅜ x ³⁄₁₆	4¹³⁄₃₂	8½	12
HLL	9⁵⁄₁₆	14¾	3- 0⁷⁄₁₆	2- 1	2-10⁵⁄₁₆	2³⁄₁₆	⅜ x ³⁄₁₆	4¹³⁄₃₂	8½	12
JSL	11³⁄₁₆	17	3-10	2- 1½	2-11⅝	2⅝	⅝ x ⁵⁄₁₆	8½	12	13
JLL	11³⁄₁₆	17	3-10	2- 1½	2-11⅝	2⅝	⅝ x ⁵⁄₁₆	8½	12	13
JKL	11³⁄₁₆	17	3-10	2- 1½	2-11⅝	2⅝	⅝ x ⁵⁄₁₆	8½	12	13

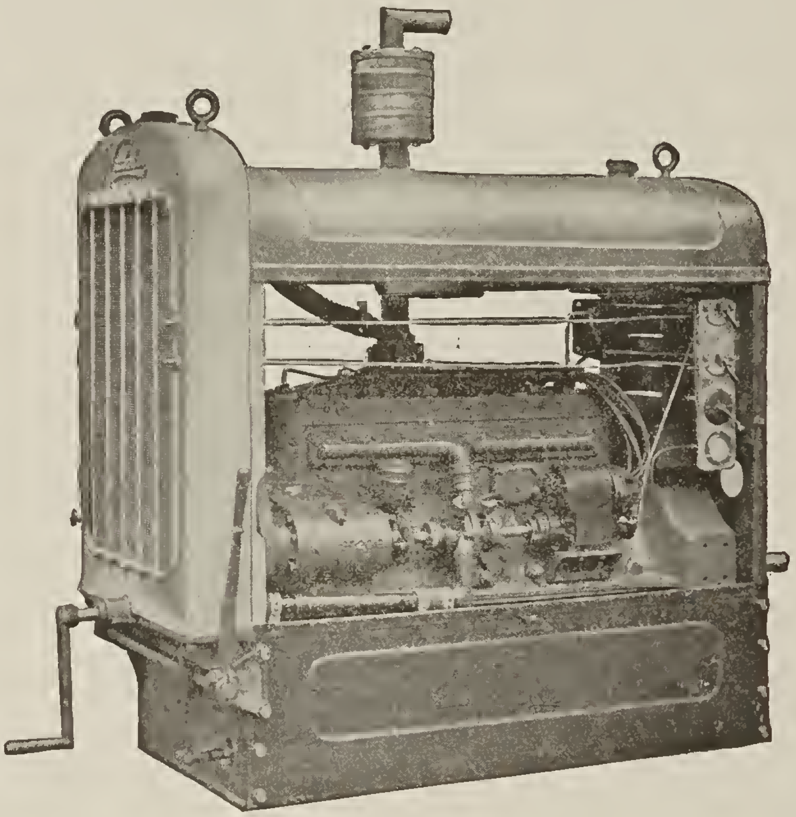
Dimensions above allow for clearance of doors and for pulleys that may overhang the power-shaft bearing. The fixed reference point for all mounting dimensions is the outside end of the hub seat portion of the power shaft. Shaft nuts, washers and grease cups are applied to the outer end of some power shafts. It is advisable to allow 4 inches for these parts on overall lengths.

WAUKESHA MOTOR COMPANY

NEW YORK WAUKESHA, WISCONSIN SAN FRANCISCO

Exclusive Builders of Heavy-Duty Gas Engines for Over Twenty Years

Waukesha Six-Cylinder Power Units



Six-Cylinder Industrial Unit Series with Power Take-Off

Standard Specifications

Engine—Waukesha "Ricardo Head," six-cylinder design.

Cooling—Radiator cooling system with water pump and V-belt driven fan.

Clutch—Dry plate clutch power take-off.

Controls—Instrument panel with spark, throttle and magneto controls.

Governor—Patented Waukesha design, self-lubricated.

Ignition—Magneto with impulse coupling.

Fuel System—Gasoline carburetor and gasoline tank. (Fuel pump may be substituted for gasoline tank if desired).

Air Cleaner—Standard equipment on all models.

Oil Filter—Standard equipment on all models.

Fuels—All Waukesha engines can be operated on kerosene, gasoline, artificial or natural gas.

Lubrication—Full pressure.

Starting—By hand crank. (See extra accessories).

Muffler—For efficiently silencing engine exhaust, all models.

Extra Accessories (*at additional cost*)

Equipment for kerosene and artificial or natural gas.

Telegraph Throttle Control for remote control of engine.

Governor Accelerator for "cutting out" governor under unusual load and speed conditions.

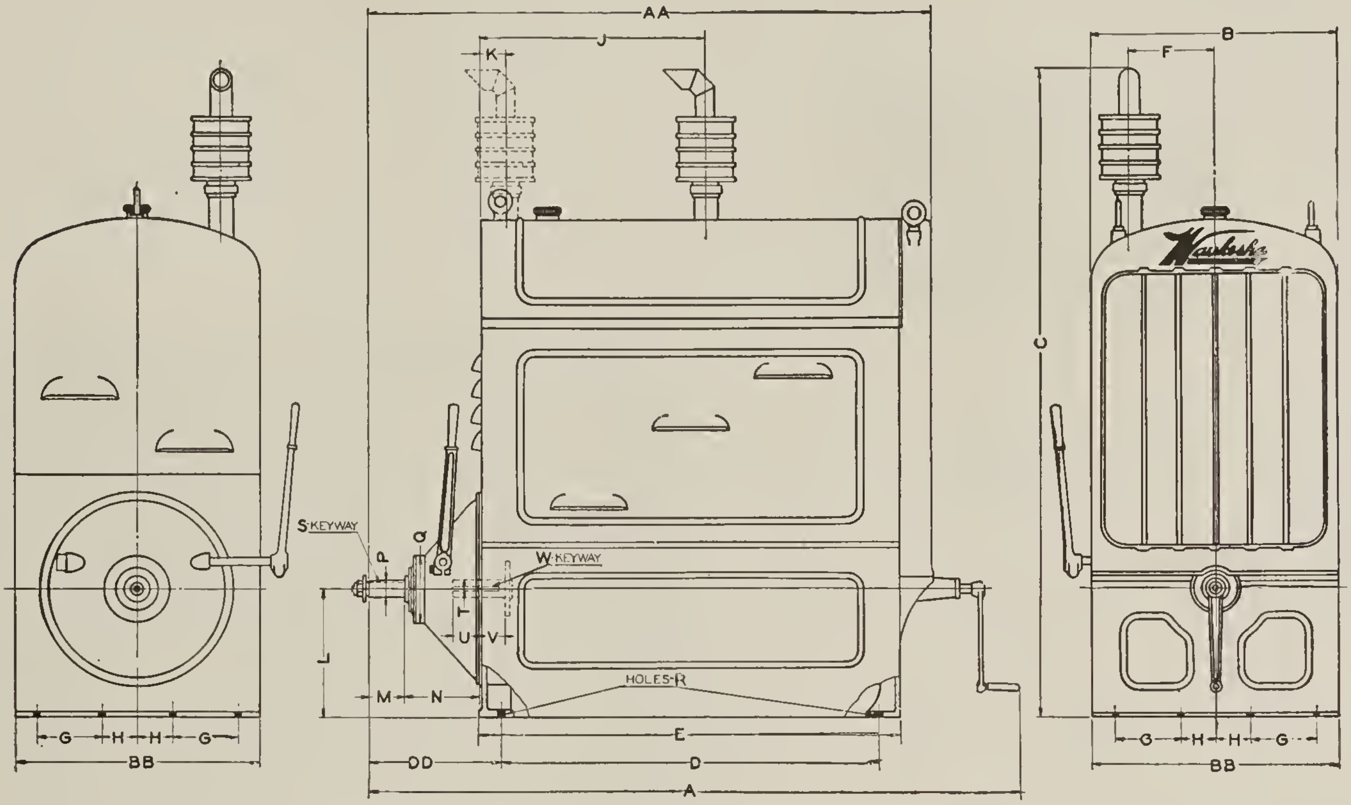
Sliding Rails—For easy servicing of power drive. Write Waukesha Motor Co.

Six-Volt Starter and Generator on Models 6XLL, 6XKL. Models 6KSL to 6RBL inclusive use either 6 or 12-volt systems.

Waukesha Gaspower Mixer with Dial Cock—Can be applied on Models 6ABL and 6RBL where artificial or natural gas only is to be used as fuel.

Extra charge for domestic crating or export boxing. Pulleys or sheaves for use with Waukesha Power Units and storage battery, for electric starting, should be purchased locally. Foundation bolts are not furnished.

Also available with Stub Shaft (see Bulletin No. 755).



Six-Cylinder Power Units

	6XLL	6XKL	6KSL	6KUL	6SRLL	6ABL	6RBL
Hp. rating	40	45	50	60	70	80	95
Governed speed (continuous)	1600	1600	1500	1500	1500	1400	1300
Governed speed (intermittent)	2200	2200	2000	2000	2000	1850	1600
Bore (inches)	3½	3¾	4	4¼	4⅜	4½	5
Stroke (inches)	4½	4½	4¾	4¾	5⅛	5¾	5¾
Stand flywheel housing	No. 3 S.A.E.	No. 3 S.A.E.	No. 3 S.A.E.	No. 3 S.A.E.	No. 3 S.A.E.	No. 2 S.A.E.	No. 2 S.A.E.
Net weight (lbs.)	1275	1300	2140	2165	2190	....	....
Net weight boxed for export (lbs.)	1775	1800	2785	2810	2835	....	....
Export Dimensions:							
Length	6′–0″	6′–0″	6′–6″	6′–6″	6′–6″	....	....
Width	3′–0″	3′–0″	3′–0″	3′–0″	3′–0″	....	....
Height	5′–0″	5′–0″	5′–6″	5′–6″	5′–6″	....	....
Cubical contents (cu. ft.)	90	90	107	107	107	....	....

DIMENSIONS FOR INSTALLING

MODELS	RATED H.P.	OVERALL					FOUNDATION								
		A	AA	B	BB	C	D	DD	E	F	G	H	J	K	L
6XLL	40	5–10⅞	5–1	2–2	2–0	4–9	3–7¼	11⅜	3–9 7/16	8 3/16	5½	4	23¾	....	13
6XKL	45	5–10⅞	5–1	2–2	2–0	4–9	3–7¼	11⅜	3–9 7/16	8 3/16	5½	4	23¾	....	13
6KSL	50	6– 3 21/32	5–6 21/32	2–4	2–4	6–0	3–7	17 13/32	4–0 5/16	9 13/16	7½	4	....	3 1/16	14¾
6KUL	60	6– 3 21/32	5–6 21/32	2–4	2–4	6–0	3–7	17 13/32	4–0 5/16	9 13/16	7½	4	....	3 1/16	14¾
6SRLL	70	6– 3 21/32	5–6 21/32	2–4	2–4	6–0	3–7	17 13/32	4–0 5/16	9 13/16	7½	4	....	3 1/16	14¾
6ABL	80														
6RBL	95														

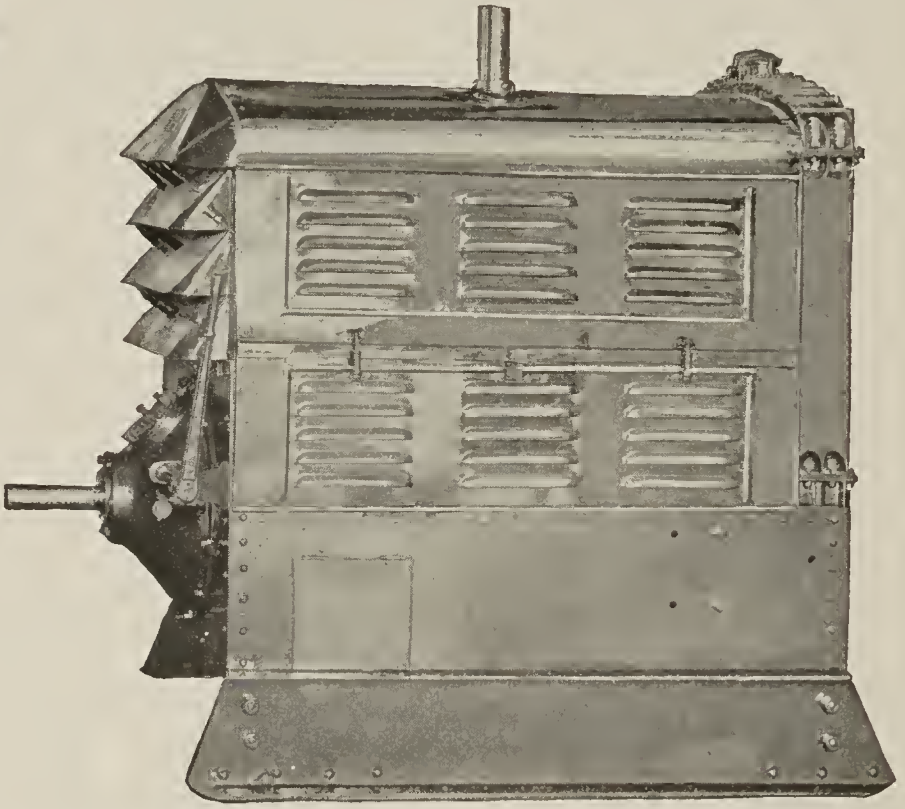
MODELS	SHAFT AND DETAILS									
	M	N	P	Q	Holes R	Keyway S	T	U	V	Keyway W
6XLL	5½	6¾	2.250	5 3/16	21/32	⅝ x 5/16	2.000	0 1/16	3⅛	⅝ x 5/16
6XKL	5½	6¾	2.250	5 3/16	21/32	⅝ x 5/16	2.000	0 1/16	3⅛	⅝ x 5/16
6KSL	6 11/32	8¼	2.125	7	25/32	½ x ¼	2.000	3	3	⅝ x 5/16
6KUL	6 11/32	8¼	2.125	7	25/32	½ x ¼	2.000	3	3	⅝ x 5/16
6SRLL	6 11/32	8¼	2.125	7	25/32	½ x ¼	2.000	3	3	⅝ x 5/16
6ABL										
6RBL										

WAUKESHA MOTOR COMPANY

NEW YORK WAUKESHA, WISCONSIN SAN FRANCISCO

Exclusive Builders of Heavy-Duty Gas Engines for Over Twenty Years

Oil Field Series with Clutch Power Take-Off



Waukesha Oil Field Power Units

Standard Specifications

Engine—Waukesha "Ricardo Head," heavy-duty four-cylinder design.

Cooling—Radiator cooling system with water pump and V-belt driven fan.

Clutch—Dry plate clutch power take-off.

Controls—Instrument panel with spark, throttle and magneto controls.

Governor—Patented Waukesha design, self-lubricated.

Ignition—Magneto with impulse coupling.

Fuel System—Gasoline carburetor and vacuum tank. (Fuel pump may be substituted for vacuum tank on Models WS, WL, WK).

Air Cleaners—Standard equipment.

Oil Filters—Standard equipment on Models WS, WL, WK.

Lubrication—Full pressure; auxiliary cylinder wall lubrication supplied on Models WS, WL and WK.

Housing—Sheet metal housing with sliding doors. Painted orange with black trademark.

Skid-base of structural steel.

Fuels—All Waukesha engines can be operated on kerosene, gasoline and artificial or natural gas. (See extra accessories.)

Starting—By hand crank. (See extra accessories.)

Extra Accessories (at additional cost)

Equipment for kerosene, artificial or natural gas fuel.

Muffler for efficiently silencing engine exhaust.

Telegraph Throttle Control, for remote control of engine.

Governor Accelerator for "cutting out" governor on unusual load and speed conditions.

Sliding Rails for easy servicing of power drive.

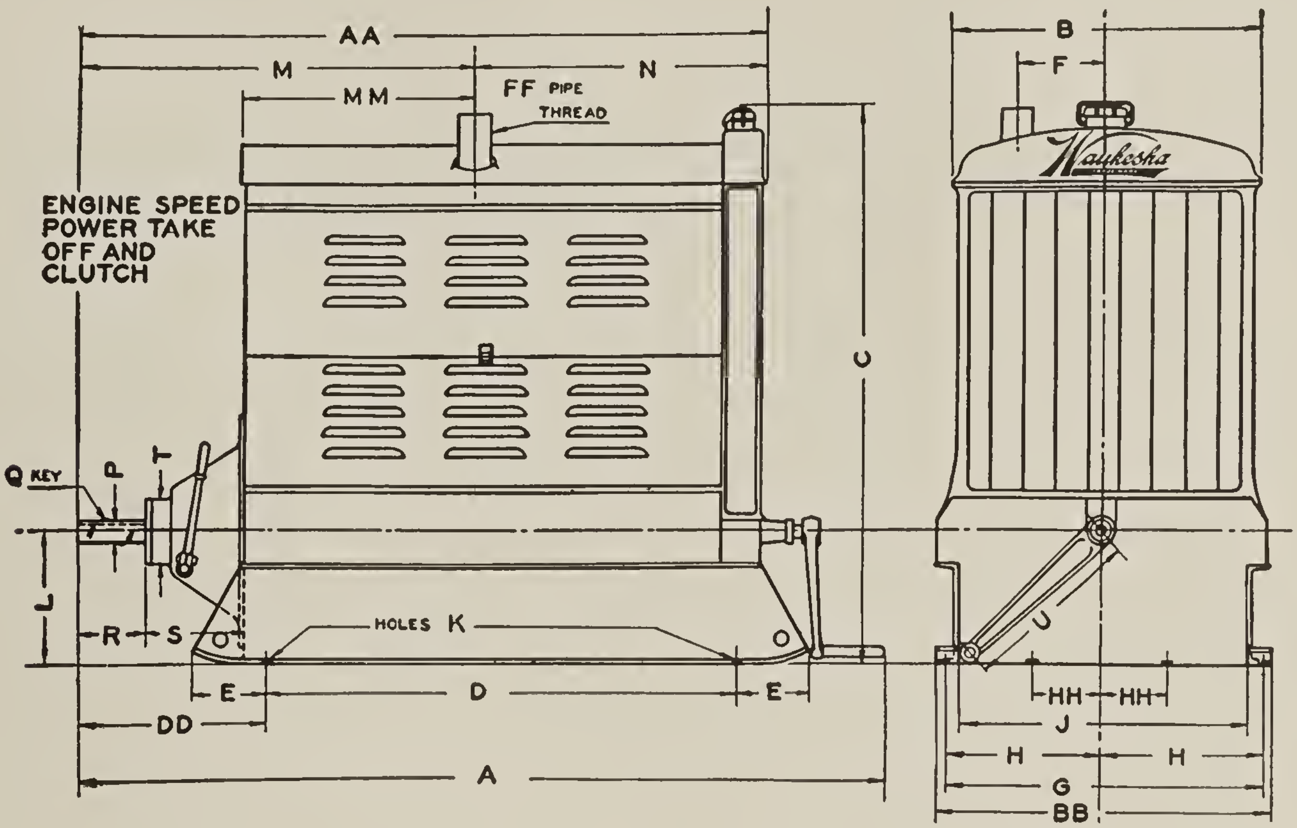
Electric Starting Equipment—Twelve-volt with ammeter; Models WS, WL and WK. Six-volt equipment on Models DR, and ER. Storage battery not furnished.

Waukesha Gaspower Mixer with Dial Cock—Models WS, WL and WK.

Scavenger Oil Pump—Models WS, WL and WK.

Compressed Air Starter—Where compressed air is available, on Models WS, WL, WK with No. 0 or No. 00 S.A.E. housings.

Extra charge for domestic crating or export boxing. Pulleys for use with Waukesha engines; and storage battery, for electric starting, should be purchased locally. Foundation bolts are not furnished.



Waukesha Oil Field Power Units

	DR	ER	WS	WL	WK
Hp. rating	40	50	80	100	120
Governed speed (continuous)	1100	1050	950	950	950
Governed speed (intermittent)	1300	1200	1050	1050	1050
Bore (inches)	4½	5	5¾	6¼	6¾
Stroke (inches)	6¼	6¼	8	8	8
Standard flywheel housing	No. 1 S.A.E.	No. 1 S.A.E.	No. 0 S.A.E.	No. 0 S.A.E.	No. 0 S.A.E.
Oiling system, capacity in gallons	2¼	2¼	4	4	4
Cooling system, capacity in gallons	15	15	28	28	28
Net weight (lbs.)	2300	2360	5025	5060	5125
Net weight boxed for export (lbs.)	3050	3110	6825	6860	6890
Export Dimensions:					
Length	6′-6″	6′-6″	8′-5″	8′-5″	8′-5″
Width	3′-6″	3′-6″	4′-2½″	4′-2½″	4′-2½″
Height	5′-6″	5′-6″	5′-10½″	5′-10″½	5′-10½″
Cubical contents (cu. ft.)	125	125	208	208	208

DIMENSIONS FOR INSTALLING

MODELS	OVERALL					FOUNDATION					
	A	AA	B	BB	C	D	DD	G	H	J	K
DR	6-5½	5-7½	3-2	3-3½	5-1	5- 0⅛	0-9¹¹⁄₁₆	3-0¼	18⅛	2- 8¾	1¹⁄₁₆
ER	6-5½	5-7½	3-2	3-3½	5-1	5- 0⅛	0-9¹¹⁄₁₆	3-0¼	18⅛	2- 8¾	1¹⁄₁₆
WS	8-9¹¹⁄₁₆	7-6½	3-5	3-6	5-7½	4-10¼	2-3⁵⁄₁₆	3-3½	19¾	2-11¾	1¹⁄₁₆
WL	8-9¹¹⁄₁₆	7-6½	3-5	3-6	5-7½	4-10¼	2-3⁵⁄₁₆	3-3½	19¾	2-11¾	1¹⁄₁₆
WK	8-9¹¹⁄₁₆	7-6½	3-5	3-6	5-7½	4-10¼	2-3⁵⁄₁₆	3-3½	19¾	2-11¾	1¹⁄₁₆

MODELS	SHAFT AND DETAILS										
	F	FF	L	M	MM	N	P	Keyway Q	R	S	T	U
DR	9⅜	2½	20	2-11½	2-3	2-10	2³⁄₁₆	⅜ x ³⁄₁₆	4½	8½	12	11¼
ER	9⅜	2½	20	2-11½	2-3	2-10	2³⁄₁₆	⅜ x ³⁄₁₆	4½	8½	12	11¼
WS	11	4	16	4- 4⅞	2-4⅞	3- 2	3¹⁵⁄₁₆	1 x ½	10	14¹¹⁄₁₆	13½	22
WL	11	4	16	4- 4⅞	2-4⅞	3- 2	3¹⁵⁄₁₆	1 x ½	10	14¹¹⁄₁₆	13½	22
WK	11	4	16	4- 4⅞	2-4⅞	3- 2	3¹⁵⁄₁₆	1 x ½	10	14¹¹⁄₁₆	13½	22

WAUKESHA MOTOR COMPANY

NEW YORK WAUKESHA, WISCONSIN SAN FRANCISCO

Exclusive Builders of Heavy-Duty Gas Engines for Over Twenty Years

ATLAS IMPERIAL FULL DIESEL STATIONARY ENGINES

Atlas Imperial Full Diesel Stationary Engines are of the Four Cycle, Mechanical Injection type. Every detail of their design and construction has been tried and proven to be entirely satisfactory on both land and sea, under the most trying conditions. Engines aggregating tens of thousands of horsepower are daily serving their owners with entire satisfaction and with the maximum of efficiency and economy.

IMPORTANT ADVANTAGES OF DIESEL ENGINES

Low Price of Fuel: The high commercial value of the Diesel Engine lies in its unsurpassed fuel economy and in its ability to burn low-priced liquid fuels with high boiling points. This great fuel economy is not confined merely to medium or large-sized units for the smallest engine has nearly the same fuel economy as the largest. Diesel Economy is Equal To The Largest Central Station.

Self-Contained Prime Mover: The Diesel Engine possesses the further great advantage of being a self-contained prime mover, its only auxiliary being the air compressor to replenish starting air. If directly connected to a direct current generator or an alternator with exciter, it comprises with the switchboard equipment, a complete electric generating station. Its space requirements are small.

Minimum Fuel Storage Space Required: The small fuel requirements of the engine reduce to a minimum the space necessary for fuel storage, and as the engine uses liquid fuels, these can be piped by gravity from tank cars to the storage tanks below track level. A 10,000 gallon tank car will supply enough fuel to drive a 100 H.P. engine at full load continuously day and night for more than two months.

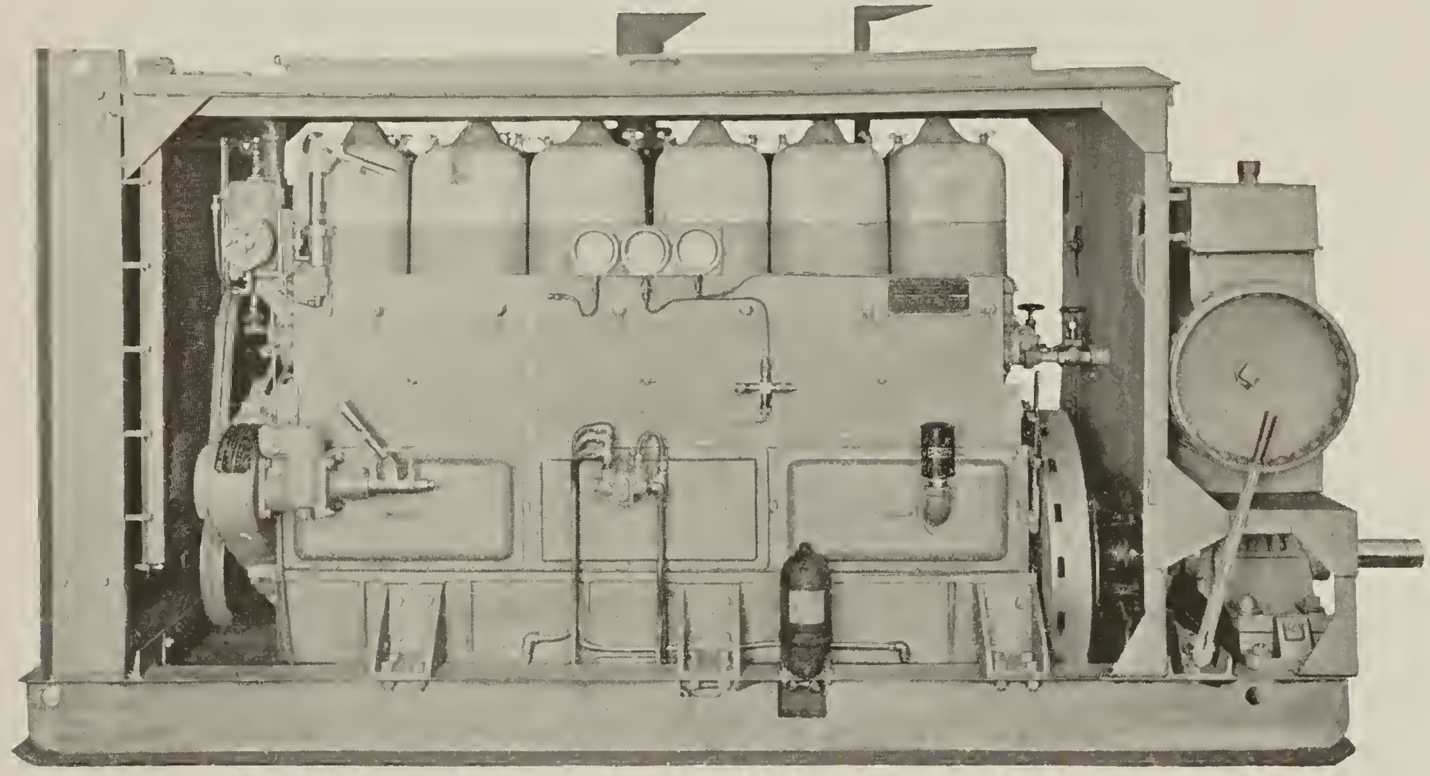
Full Power Quickly Available: The engine is in readiness for instant operation, and can take on full load from no load, as quickly as the operator can make the different shifts. With the stopping of the engine no further fuel is consumed. The Diesel engine has no stand by losses and in this respect differs from other prime movers in that its over-all economy is not dependent on the efficient operation of auxiliaries or even on the skill of the operators, as its operation is largely an automatic thermodynamic process in the engine itself.

Reliability: With a correctly designed and efficiently built engine this economy will be maintained undiminished during the life of the engine, provided the engine receives proper care. The Diesel engine has been developed to such a degree of perfection during the past decade that carefully built engines can be considered as reliable as steam equipment. In addition Diesel progress has been one of increasing of its refinements, a lengthening of its life, an increasing of its reliability, and facility in handling, and perfection of its governing under varying loads. In these it is unapproached by any type of prime mover.

These features recommend Atlas Imperial Full Diesel Stationary Engine to every power user, interested in reducing costs. In most cases a Diesel installation will result in an annual reduction in power costs ranging from 33 1/3 to 50 percent. The attendance required is no greater than for an electric motor installation. Full power from stone cold in less than one minute gives the owner of an Atlas Imperial Diesel every convenience of electric power.

Fuel Consumption: Using regular 24 Baume Diesel fuel oil, the fuel consumption averages 4-10 pounds per B. H. P. hour or approximately 5 1-2 gallons per 100 B. H. P. hours.

ATLAS IMPERIAL FULL DIESEL POWER UNITS.



4 CYLINDERS—80 H. P. 6 CYLINDERS— 120 H. P.

H. P.	No. of Cns.	Bore	Stroke	R.P.M.	Net Weight
80	4	7″	8½″	650	9000 lbs.
120	6	7″	8½″	650	11400 lbs.

The power unit is a plant complete in itself, the engine being mounted on steel "I" beam skids with radiator, clutch, fuel tank and compressor unit all mounted integrally as a self-contained unit. The entire outfit is covered by a steel canopy.

Road Builders Units: (not illustrated) Consisting of engine mounted on structural steel skids. Flywheel on engine is fitted with a built-in disc clutch and a shaft extension with outboard bearing. Shaft extends through bearing to receive an overhanging pulley (pully and fuel tank not supplied). Also supplied with radiator and water circulating pump. Made in the following sizes:

B. H. P.	No. of Cyl.	Bore & Stroke	R. P. M.
45	3	6½″x 8½″	600
80	4	7 ″x 8½″	650
80	4	7½″x10½″	450
120	6	7 ″x 8½″	650
120	6	7½″x10½″	450
110	4	9 ″x12 ″	360
160	6	9 ″x12 ″	360
135	4	10 ″x13 ″	327
200	6	10 ″x13 ″	327

These are specially built for Portable Service to operate Rock Crushers, Air Compressors, etc., in Railroad Construction or other work where shifting camps and equipment is frequently necessary. Operates at a fraction of the cost of operating a Steam Donkey Engine, also eliminates the fire hazards of a Steam plant.

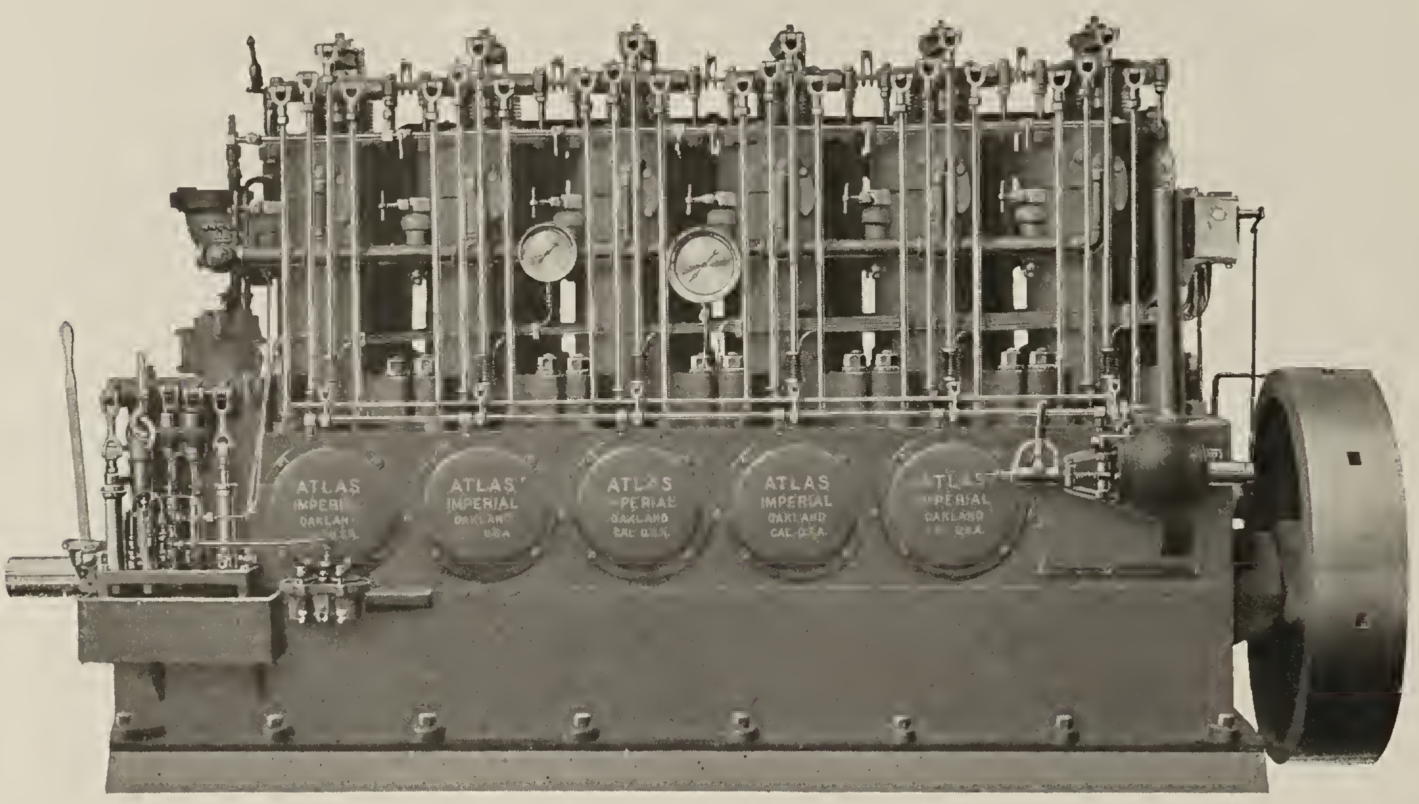
Further information and complete proposals on engines described in these pages furnished on request.

Atlas Imperial Full Diesel Engines are also built in Marine sizes from 30 to 500 horsepower. Also for Tractors, Shovels, Excavators, Locomotives, etc. If interested write us for complete details.

SIZES AND DESIGNS OF ALL ENGINES SUBJECT TO CHANGE WITHOUT NOTICE

ATLAS IMPERIAL FULL DIESEL STATIONARY ENGINES.

SIX CYLINDER TYPE—BUILT IN 120, 160, 200, 275, 350, 450 and 480 H. P.



H.P.	Bore	Stroke	R.P.M.	Lbs. Net Wt.	Lbs. Ship. Wt
120	7½"	10½"	450	12300	15500
160	9 "	12 "	360	18500	24000
200	10 "	13 "	327	23600	29600
275	11½"	15 "	300	37300	43000
350	12½"	16 "	300	48000	61000
450	14 "	18 "	277	61000	74000
480	14½"	18 "	277	63000	76000

Direct connected Atlas Imperial Diesel generator sets can be furnished in either 2, 3, 4, 6, 8 cylinder sizes and in powers from 20 to 500 H. P. Alternating or Direct current.

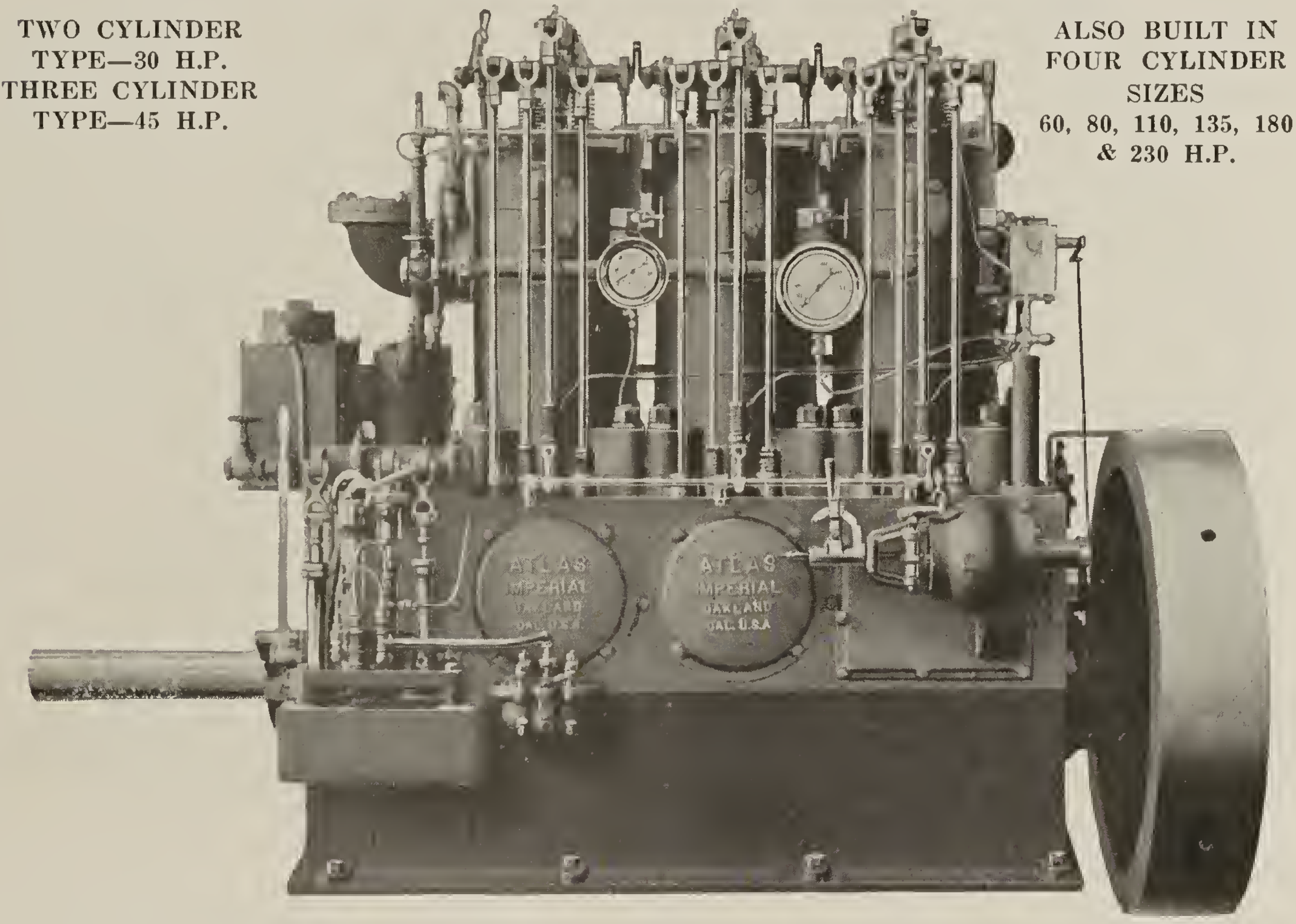
Regular equipment "A" included with all engines: Engine with one flywheel only—gear driven governor and speed regulator; high pressure fuel pump (1 to 4 pumps, depending on engine size); fuel oil strainer, lubricating oil pump; mechanical force feed lubricator except on Industrial Type engine; fuel oil pressure gauge, lubricating oil pressure gauge; cylinder relief valves on each cylinder; Air starter valve.

Accessories included in "A" equipment:
1—lubricating oil service tank
  Set of Engineers Open End wrenches
  Two squirt cans
  Extra Spare parts included with "A" equipment:
1—Extra Complete Spray Valve
6—Spray Nozzle Gaskets
4—Spray Nozzle Cleaning Needles
1—Exhaust Valve
1—Set Air Inlet Gaskets
1—Spray Valve Test Tube
1—Steel Fuel Pipe Union
1—Fuel Pump Plunger
1—Fuel Oil Service Tank with Strainer
  (in-built on smaller sizes)
1—Oil Filler—Flywheel Jacking Bar
2—Spray Valve Nozzle Tips
2—Spray Nozzle Cam Points
1—Spray Valve Testing Clamp
1—Exhaust Valve Spring
1—Set Cylinder Head Gaskets
  Metallic Packing and Rings
1—Punch to remove Spray Tips
1—Spray Tip Cleaning Plunger

ATLAS IMPERIAL FULL DIESEL STATIONARY ENGINES.

TWO CYLINDER
TYPE—30 H.P.
THREE CYLINDER
TYPE—45 H.P.

ALSO BUILT IN
FOUR CYLINDER
SIZES
60, 80, 110, 135, 180
& 230 H.P.



H.P.	No. of Cyl.	Bore	Stroke	R.P.M.	Net Wt.	Ship Wt. Lbs.
30	2	6½″	8½″	600	3900	5800
45	3	6½″	8½″	600	5100	7200
60	4	6½″	8½″	600	6000	8400
80	4	7½″	10½″	450	9400	12000
110	4	9 ″	12 ″	360	15000	20000
135	4	10 ″	13 ″	327	18000	22500
180	4	11½″	15 ″	300	30000	36,500
230	4	12½″	16 ″	300	33500	40000

AVERAGE POWER COSTS COMPARISON FOR A FEW INDUSTRIES WHERE THE DIESEL ENGINE MAY BE USED ADVANTAGEOUSLY

Flour Mills having a capacity of 75 to 1000 bbls., operating with steam or purchased electric power, have an average power cost ranging from 15c to 25c per bbl. An Atlas Imperial Diesel Engine will reduce this to an average of 4c to 6c per bbl.

Ice Plants of 30 to 200 tons capacity using electric current will consume an average over the year of 55 K. W. per ton of ice manufactured. At an average cost of 2c per K. W. this would represent an energy charge of $1.10 per ton. Steam operated plants have a fuel cost ranging from 75c to $2.00 per ton depending on the condition of of the plant.

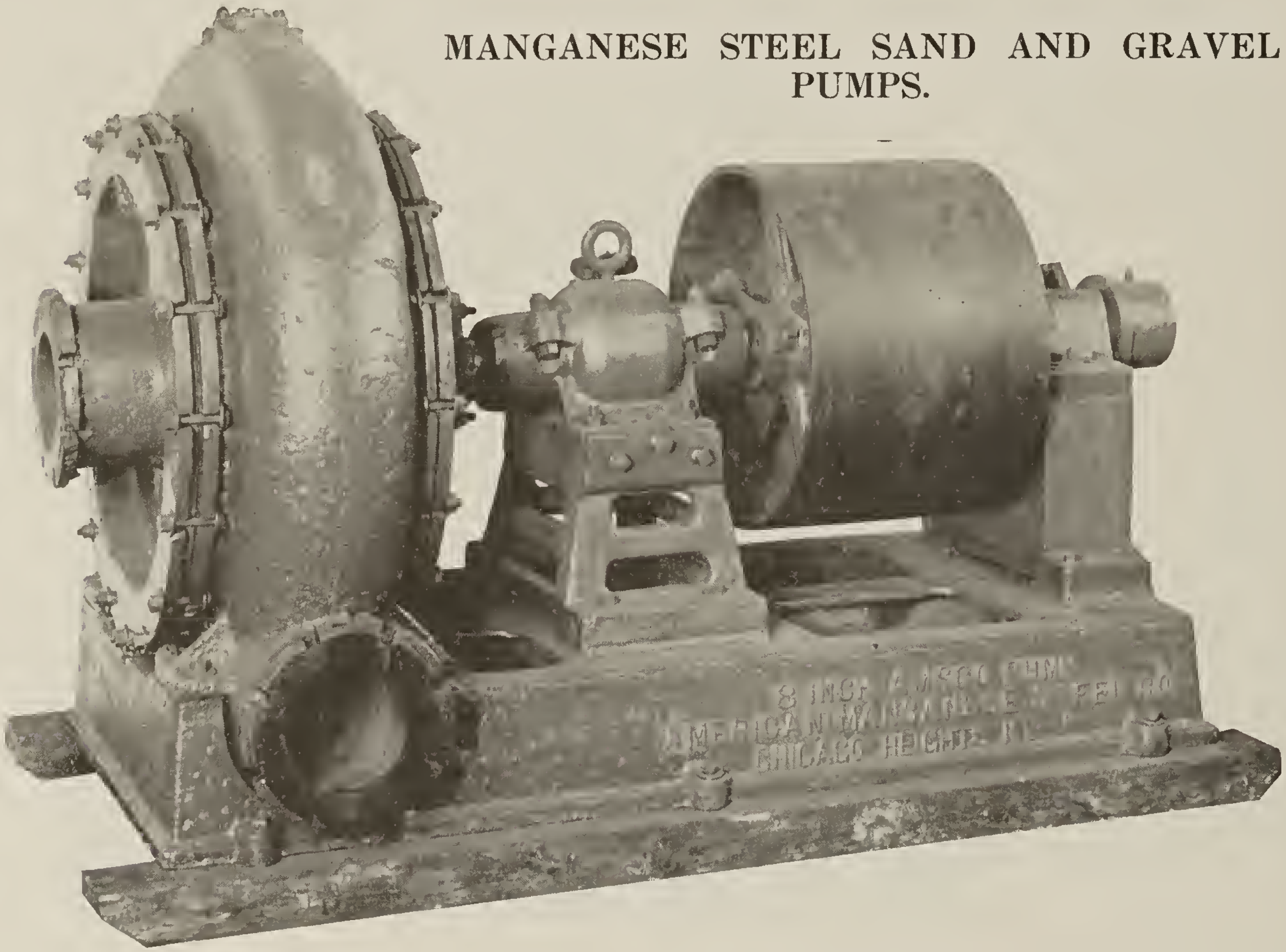
An ice plant equipped with an Atlas Imperial Diesel will produce a ton of ice for a fuel cost of 30c. Labor required is the same as for an electrically operated plant.

Electric Light, Manufacturing and Water Pumping Plants can in most cases be operated at a great saving with Diesel power as compared with a steam operated plant. Being a completely self-contained unit, requiring relatively small space it is possible to install one or more Atlas Imperial Diesel Engines and obtain complete flexibility to suit any load or operating condition.

The engines may be direct connected to generators for the production of electric current, or they may be connected direct or through gearing to reciprocating or centrifugal pumps.

With a 60% load factor an Atlas Imperial generating unit will produce current for less than 1c per K. W., including fuel, lubricating oil and all fixed charges.

MANGANESE STEEL SAND AND GRAVEL PUMPS.



Manganese steel pumps are the ideal outfits for pumping sand and gravel. All the parts of these pumps which are exposed to the constant abrasive wear are made of manganese steel. This metal is an alloy steel of special heat treatment, and because of its tough hardness and resistance to impact, shock loads and abrasive wear insures the maximum service to pump parts.

All Amsco pumps are built to an exacting standard which makes repairs fit perfectly.

Our engineers have installed many of the sand and gravel plants throughout this territory. We will be glad to go over your project and make recommendations. We can make quotations on a complete plant ready to operate and makeit a practice of saving money for anyone in suggesting the most economical and profitable layouts.

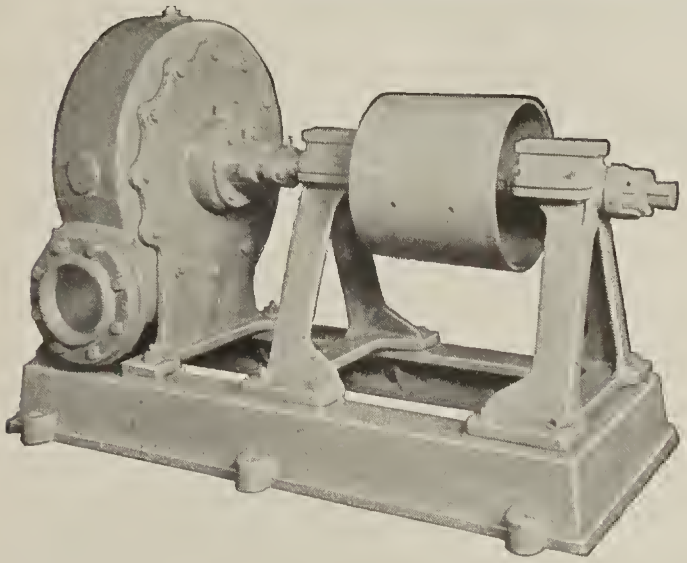
Amsco pumps are built for belted and directly connected drives in 4 in., 6 in., 8 in., 10 in., 12 in., and 15 in., sizes. Flap valves, elbows, pipe, pipe flanges, agitator ladders, drive gears, cutter heads, and teeth are also built to meet the individual user's requirements.

We can supply repairs on any sand pump equipment.

You will find in this catalog a complete description of steel barges, ladders, hoists, spiral pipe, and everything needed in sand pumping.

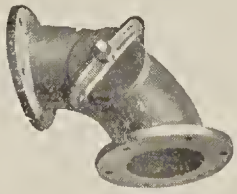
Write us for expert advice when figuring on a sand plant installation.

SEMI-STEEL SAND AND WATER PUMPS.



For the sand plant where continuous service is not necessary and where the demands made upon the pumping equipment is limited we recommend our semi-steel pump. This pump will not stand the continuous abrasive action of heavy pumping as the shell and plates are not made of Manganese steel. However this installation will deliver sand and gravel in profitable quantities and is recommended highly for a water pump which will deliver large volumes of water.

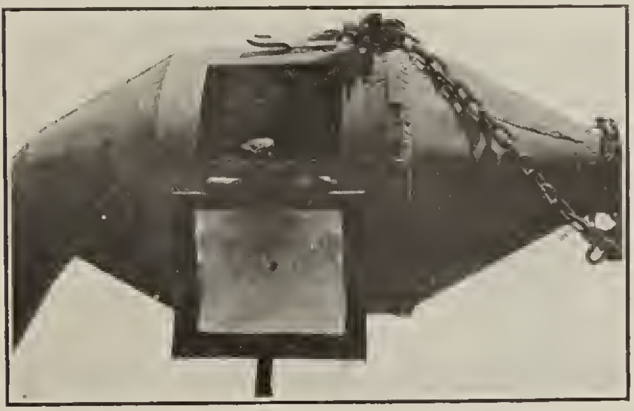
These pumps are made in a variety of sizes and are just the thing for the temporary and inexpensive plant.

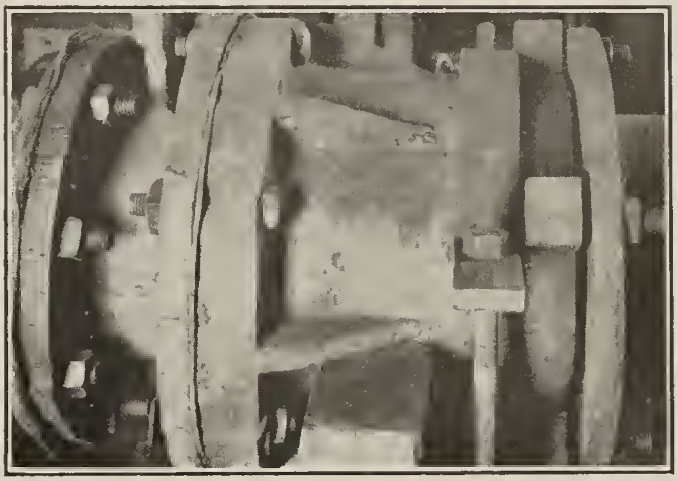


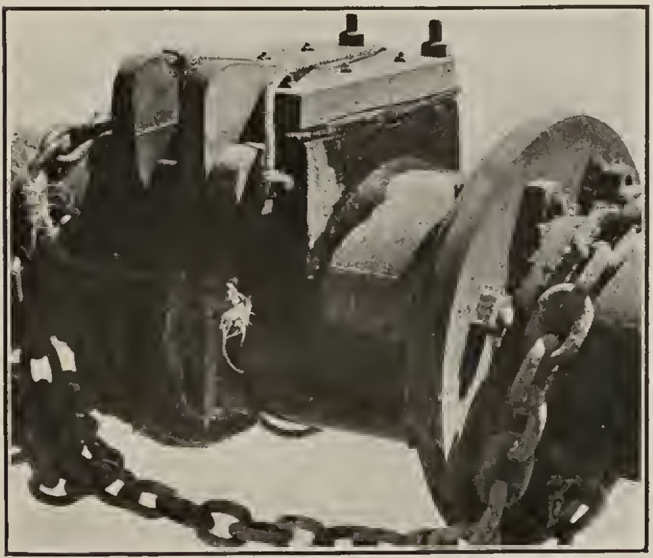
We carry a complete line of semi-steel fittings, such as flap valves, long sweep elbows, elbows with hand holes and everything in this line.

Our semi-steel equipment enables us to make quotation on inexpensive plants as well as the standard manganese steel plants which will stand heavy service.

Write us for more detailed information on this line.





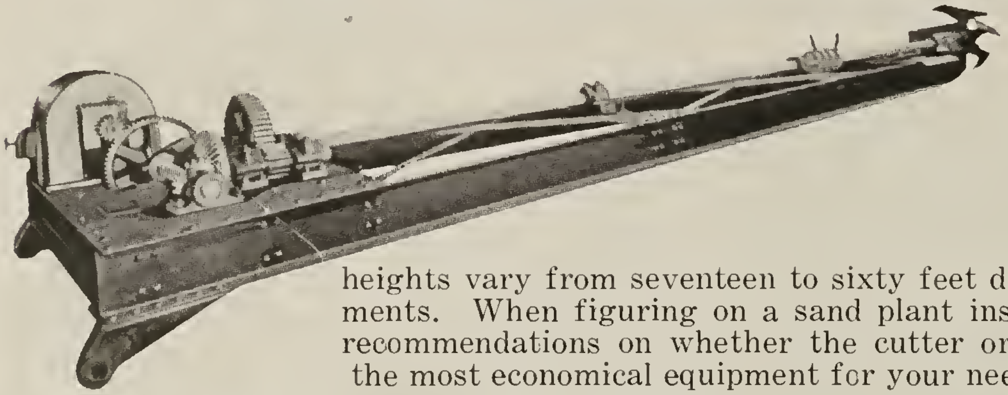


Rock Catchers, Swivel Joints and Foot Valves are very essential in every sand pumping plant. We have a complete line of sand plant accessories and will gladly give all information on your needs.

These Rock Catchers, Swivel Joints and Foot Valves are made for either 6 or 8 inch plant and can be supplied on special order for larger plants. We will gladly go over your pumping problems and make recommendations which will increase your production and save you money.

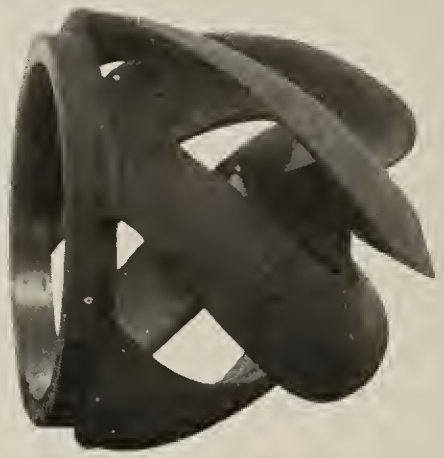
SAND AND GRAVEL BARGE EQUIPMENT.

STEEL LADDER WITH CUTTER AND DRIVING MECHANISM.



These Ladders are built for sand pumping outfits from 6 to 15 inches and are made with wooden or steel ladders and with belt or motor drive. The heights vary from seventeen to sixty feet depending upon your requirements. When figuring on a sand plant installation be sure to ask our recommendations on whether the cutter or the chain ladder would be the most economical equipment for your needs.

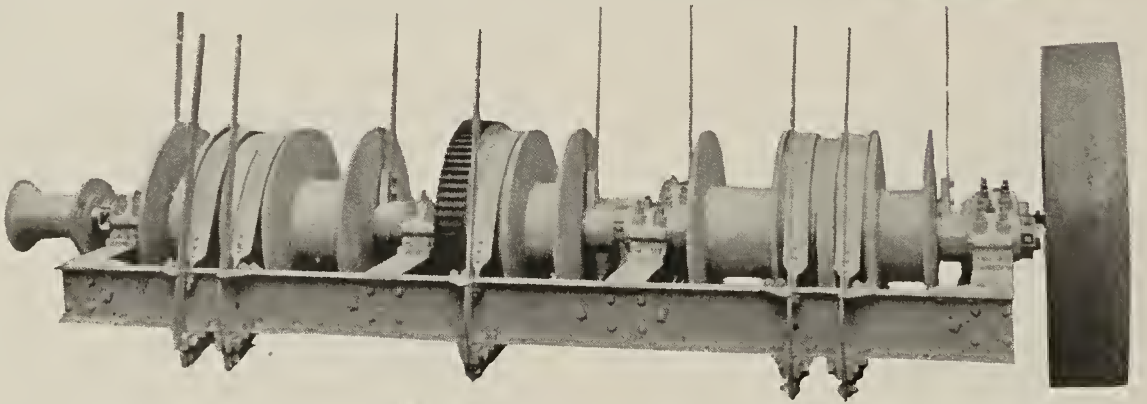
MANGANESE STEEL CUTTERS.



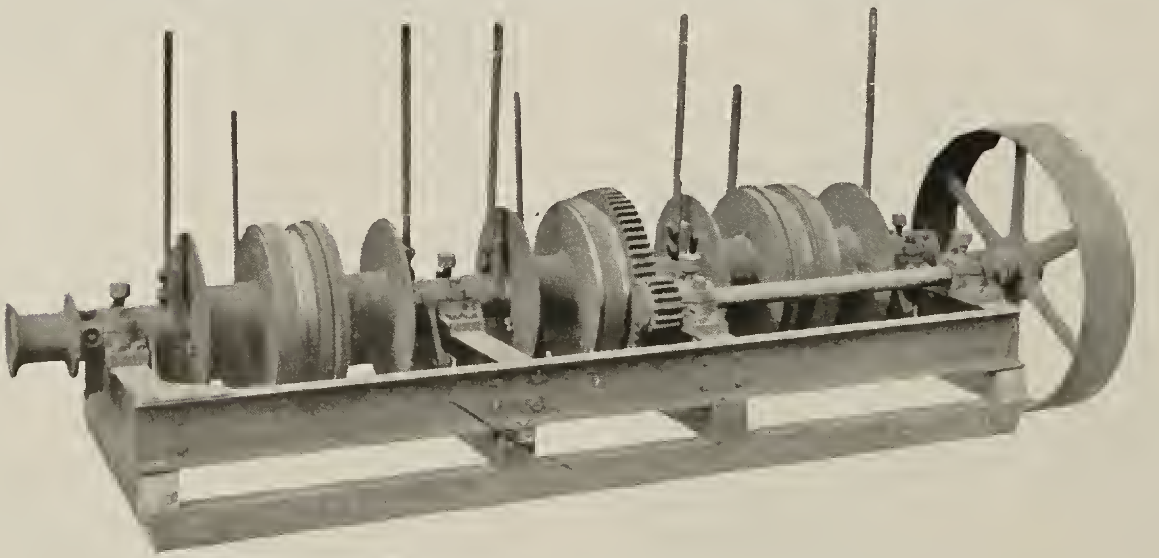
These cutters are built in a variety of sizes and styles to meet your particular requirements. Whether you are working in sand and gravel deposits or if you are doing dredging work, we have a cutter that will meet your needs. These cutters come separately as replacement items or may be purchased as a part of the complete ladder.

HOISTS FOR THE PUMP BARGE.

Special Hoists for the sand pumping barge are made for belt drive or direct connection to an electric motor. They are made in three or five drum sizes to most any requirement. When figuring on an installation please let us give our recomendations and questions.



TYPE A-5—FIVE DRUM HOIST—BELT DRIVE FOR CUTTER BARGE
7-Inch Drums, 2000 Pound Single Line Pull. Weight 2500 Pounds.



TYPE B-5—FIVE DRUM HOIST—BELT DRIVE FOR CUTTER BARGE
12-Inch Drums. 4000 Pounds Single Line Pull. Weight 5000 Pounds.
Write Us For Our Recommendation On Your Sand Pumping Problems.

The Eagle "Swintek" Screen Nozzle Ladder
for
Sand and Gravel Pumping Plants

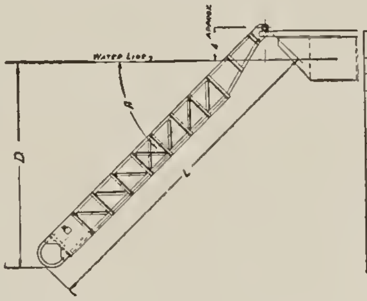
We recognize hydraulic engineering as a highly specialized profession, and believe a given project can only be successfully developed by an experienced, trained engineer. The experience of our engineers in the field makes it possible for us to be of co-operative assistance to the dredge pump user, insuring that a recommended plant outlay will be correct.

The Eagle "Swintek" Screen Nozzle Ladder is one of the most essential factors pertaining to dependable production of sand and gravel materials by pump dredges because it guarantees regularity of feed flow of solids to the nozzle of the suction pipe line. It has been demonstrated, time after time, digging in any deposit, that an agitator is advantageous. Few sand and gravel deposits escape having oversize boulders as well as strata of mud, hard pan, and conglomerate, all of which have a tendency to interrupt digging results where only plain suction is used.

The Eagle "Swintek" Ladder, consisting of a steel ladder frame surrounding the suction line, carrying a traveling screen chain with hook links which dig into and agitate the deposit, has successfully solved dredging production problems.

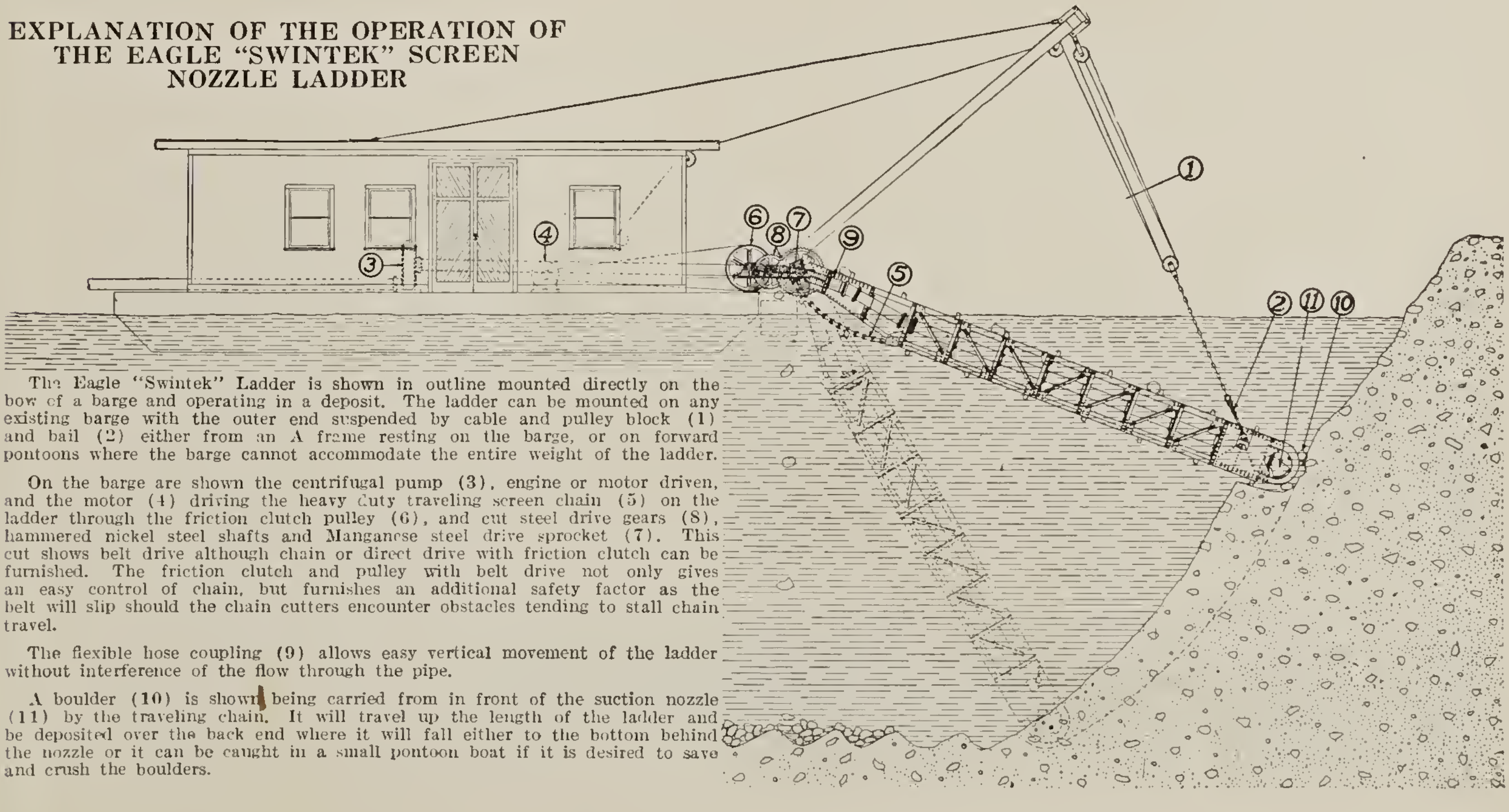
We can refer you to operators who have increased their capacity 100 to 300 per cent by installing an Eagle "Swintek" Screen Nozzle Ladder. By the efficient operation obtained these same operators have cut their power costs 25 to 50 per cent. One operator ran eighteen hours a day an entire season and reported only three hours lost time due to nozzle difficulties.

Select the length of ladder necessary from the table given and advise us your pump size and we will be glad to quote on a Screen Nozzle Ladder to suit your conditions. Let us send you our complete Eagle "Swintek" Screen Nozzle Ladder bulletin and we will be glad to go over your dredging problem carefully and give you the benefit of our dredge design and installation experience. This will be without cost to you—It is a part of **The Victor L. Phillips Co.** service.



L	D WHEN A = 45°	D WHEN A = 60°
15	6.5	9
20	10	13
25	13.5	17.5
30	17	22
35	20.5	26
40	24	30.5
45	27.5	35
50	31	39
55	35	43.5
60	38.5	48
65	42	52
70	45.5	56.5
75	49	61

EXPLANATION OF THE OPERATION OF THE EAGLE "SWINTEK" SCREEN NOZZLE LADDER



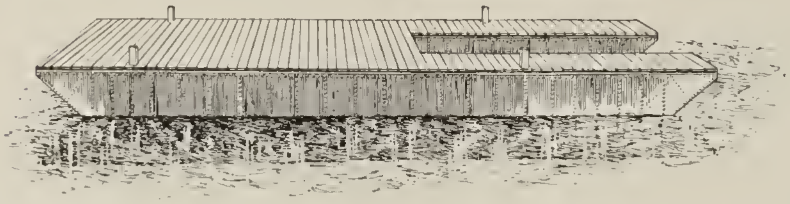
The Eagle "Swintek" Ladder is shown in outline mounted directly on the bow of a barge and operating in a deposit. The ladder can be mounted on any existing barge with the outer end suspended by cable and pulley block (1) and bail (2) either from an A frame resting on the barge, or on forward pontoons where the barge cannot accommodate the entire weight of the ladder.

On the barge are shown the centrifugal pump (3), engine or motor driven, and the motor (4) driving the heavy duty traveling screen chain (5) on the ladder through the friction clutch pulley (6), and cut steel drive gears (8), hammered nickel steel shafts and Manganese steel drive sprocket (7). This cut shows belt drive although chain or direct drive with friction clutch can be furnished. The friction clutch and pulley with belt drive not only gives an easy control of chain, but furnishes an additional safety factor as the belt will slip should the chain cutters encounter obstacles tending to stall chain travel.

The flexible hose coupling (9) allows easy vertical movement of the ladder without interference of the flow through the pipe.

A boulder (10) is shown being carried from in front of the suction nozzle (11) by the traveling chain. It will travel up the length of the ladder and be deposited over the back end where it will fall either to the bottom behind the nozzle or it can be caught in a small pontoon boat if it is desired to save and crush the boulders.

STEEL BARGES FOR SAND BOATS AND MATERIAL HANDLING.

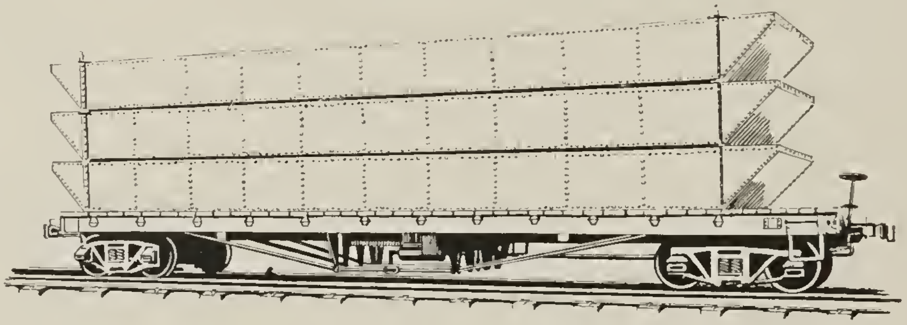


The use of wooden boats has long ago ceased on ocean work and all new river barges are being built of steel. The steel barge eliminates the expensive repair work which is a continual item on wooden barges. Steel barges should be painted once a year and that is all the work usually necessary to keep them in use constantly. Our steel barges are built to order and can be adapted to meet any local conditions or uses.

STEEL BARGE FOR SAND PUMP

The most modern and most easily handled sand boat is built on a steel barge. These barges can be built to accommodate any kind of pump and any kind of ladder or nozzle. The boat illustrated above is the barge built especially to take care of our Swintex digger. Note the special construction which allows the ladder to descend near the center of the barge. This construction does not allow the digger to effect the angle of tilt nor the buoyancy of the barge. This barge allows plenty of room for the pump, hoist and the shore line hoist. None of the machinery is placed in the hold of the barge but on the top decking. The interior of the barge is strongly braced with rivited steel truss-work which make the boat rigid and stout.

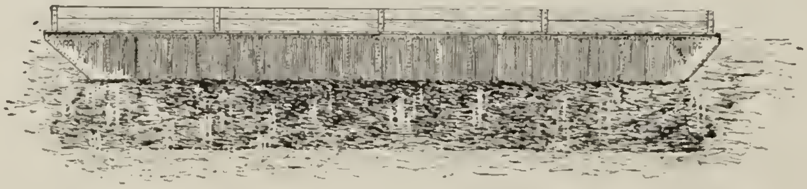
Barges of this kind are assembled at the factory and are shipped as illustrated at the right. Barges can be especially constructed so that they can be taken apart and transported overland. These barges are built in six or nine or even more sections, each section of which is complete and seaworthy in itself. These sections are then bolted together in the form of a complete barge. We will be glad to go over your problems and make a drawing of a barge which is particularly adapted to your requirements.



BARGES FOR HANDLING MATERIAL.

For the sand plant owner who pumps onto barges and tows them to shore for unloading we have barges which cost approximately the same as the old fashioned wooden barges of years ago. The barge illustrated here was built to handle three car loads of sand in this manner. The barge is built up in any size and is fitted with a steel deck. The boat has fittings for a wooden cribbing around the edge which forms a box for your material. Unloading can then be easily accomplished with a clamshell crane or derrick fitted with such a bucket.

Similar barges can be built for house boats, commissary boats, or material handling boats. With the government program of river work under way the most economical method of material handling will be by water. Write us for special recommendations on your problem and for an estimate on your barge. He can give you prompt shipments including completion of your barge ready for work at your destination.



TAYLOR SPIRAL PIPE

Taylor Spiral Pipe is made in sizes 3″ to 42″ diameter. Standard lengths are 20′, lengths up to 40′ can be furnished.

Light weight, combined with great strength, make this pipe particularly adapted for water conveying purposes under pressure and for air and exhaust steam piping. Taylor Pipe is used widely in pulp and paper mills, sand and gravel plants, dredging and hydraulic mining.

All Taylor Spiral Pipe is made of Copper Alloy Steel, insuring long life. Galvanized Piping can be furnished in lengths up to 20′ and asphalted piping up to 40′ lengths. Both coatings are applied by the hot dip process.

Price List Spiral Riveted Pressure Pipe

PLAIN ENDS WITHOUT CONNECTIONS

Inside Diam. Inches	Thickness Birmingham Gauge	Price Per Foot		Approx. Weight Per Foot Asphalted	Approx. Bursting Strength Lbs. Per Sq. In.
		Asphalt Coated	Galvanized		
3	18	$0.39	$0.53	2.3	2000
4	16	.52	.73	3.7	1875
6	16	.74	1.04	5.3	1250
	14*	.87	1.21	6.6	1560
8	16	1.00	1.40	7.1	935
	14*	1.16	1.62	8.8	1170
10	16	1.24	1.73	8.8	750
	14*	1.45	2.01	11.0	935
12	16	1.48	2.07	10.6	625
	14*	1.72	2.40	13.0	780
14	14	2.00	2.91	15.9	670
	12*	2.77	3.89	22.2	940
16	14	$2.36	$3.33	18.1	585
	12*	3.15	4.43	25.2	820
18	14	2.63	3.66	19.9	520
	12*	3.40	4.84	27.6	730
20	14	2.92	4.06	22.1	470
	12*	3.82	5.37	30.6	660
22	12	4.21	5.91	33.7	595
	10*	5.15	7.26	42.2	765
24	12	4.47	6.41	36.5	540
	10*	5.59	7.88	45.7	705

*Extra heavy.

Above list prices subject to discount.

Flanges for Spiral Riveted Pipe—Forged Steel

Spiral Pipe Standard Drilling

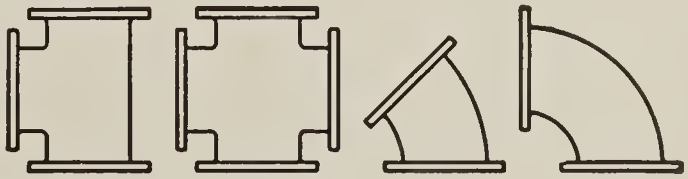
Size Inches	Outside Diam. Inches	Price Each with Bolt Holes		Dimensions of Drilling		
		Black Attached to Pipe	Galvanized Attached to Pipe	Number of Bolts	Diam. of Bolts Inches	Diam. of Bolt Circle Inches
3	6	$1.75	$1.90	4	7/16	4¾
4	7	2.05	2.30	8	7/16	5 15/16
6	9	2.75	3.15	8	½	7⅞
8	11	3.45	4.05	8	½	10
10	14	4.50	5.45	8	½	12¼
12	16	4.75	5.85	12	½	14¼
14	18	5.50	6.80	12	½	16¼
16	21¼	8.60	11.00	12	½	19¼
18	23¼	10.30	13.35	16	⅝	21¼
20	25¼	12.50	15.85	16	⅝	23⅛
22	28¼	15.95	20.25	16	⅝	26
24	30	18.00	22.70	16	⅝	27¾

American Standard Diameter and Drilling

Size Inches	Outside Diam. Inches	Price Each with Bolt Holes		Dimensions of Drilling		
		Black Attached to Pipe	Galvanized Attached to Pipe	Number of Bolts	Diam. of Bolts Inches	Diam. of Bolt Circle Inches
3	7½	$2.60	$3.40	4	⅝	6
4	9	3.60	4.40	8	⅝	7½
6	11	4.80	5.85	8	¾	9½
8	13½	6.35	8.00	8	¾	11¾
10	16	7.90	10.00	12	⅞	14¼
12	19	11.30	14.80	12	⅞	17
14	21	12.90	16.75	12	1	18¾
16	23½	17.20	22.00	16	1	21¼
18	25	19.75	27.25	16	1⅛	22¾
20	27½	23.50	33.00	20	1⅛	25
22	29½	26.75	37.50	20	1¼	27¼
24	32	30.25	42.90	20	1¼	29½

Piping and Flanges are made from 3″ to 42″ diameter. Also a full line of Valves, Fittings and Piping Accessories.

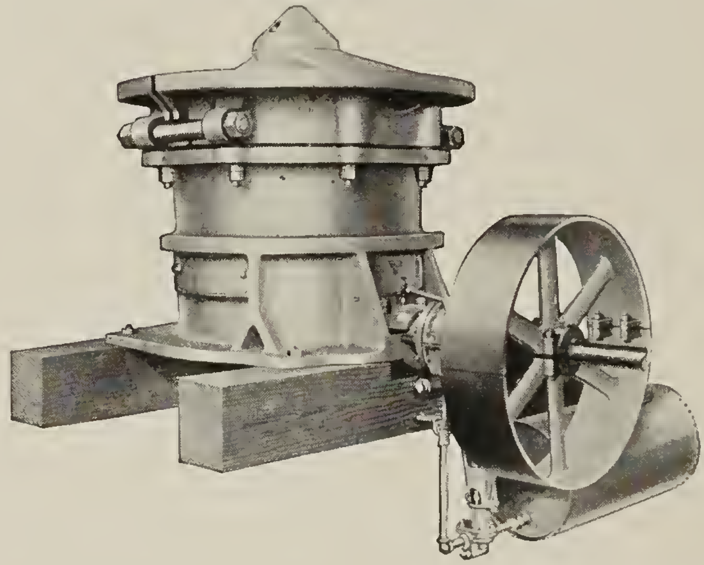
Patterns for C. I. Fittings up to 24″.
Sheet Steel Fittings in All Sizes.



TELSMITH PRIMARY BREAKERS

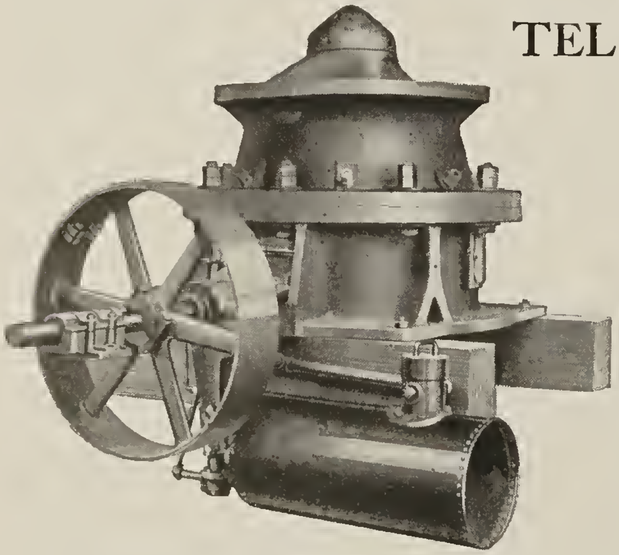
The Telsmith Primary Breaker is a coarse crusher of the gyratory, pillar-shaft type. Short in structure, it is very economical of head-room. It has a *steel* frame, *steel* crown, and rigid *unbreakable* shaft—*all three guaranteed against breakage by tramp iron.* The long sleeve-type eccentric has enormous bearing areas and renewable babbitt sleeves. Crushing cone and bowl are unusually large in diameter. The feed and crushing areas are the largest in any gyratory breaker. All bearings are automatically lubricated by oil under pressure with apparatus for straining, settling and cooling the oil. The *parallel crushing stroke* is equal at all points of the head and exerts the full "pinch" on the big chunks just as they enter the crusher, eliminating lost efficiency due to slippage. Crusher discharges freely through bottom spider—no clogging of discharge chute. The independent discharge chute is attachable at any desired position. Telsmith has the most vigorous feed and the largest output of any coarse crusher.

AN INSURED CRUSHER



TELSMITH PRIMARY BREAKER—SIZES, CAPACITIES, ETC.

Number of Breaker	6A	8A	10A	13A	16A	20A	25A
Dimension of each receiving opening, ins.	6¾x35	8x41	10x 51	13x 59	16x 74	20x 88	25x106
Both about	6¾x70	8x82	10x102	13x118	16x148	20x176	25x212
Net weight of crusher in lbs., about	9650	12850	18400	28000	47650	68000	110000
Size of driving pulley	32x10	36x10	42x10	48x14	52x18	56x20	60x20
Speed of driving pulley, R.P.M.	575	550	510	410	330	315	360
Horsepower required	15	20	25	40	60	80	100
Size of elevator required, for crusher output only	3	4	5	6	7	8	9
Diam. of screen recommended, for crusher output only	32	32	40	48	48 or 60	60 or 72	72
Hourly capacity, tons, about	15–20	25–35	30–50	60–90	100–140	170–230	250–325
Smallest bottom opening advisable, inches	1	1¼	1½	2	2¼	2½	3
Largest bottom opening advisable, inches	1½	1¾	2 [illegible]/8	2⅞	3¼	3½	4



TELSMITH REDUCTION CRUSHERS

A FOOL PROOF RE-CRUSHER

The Telsmith Reduction Crusher is designed to follow a jaw or gyratory breaker, re-crushing to ½, 1, 1½ inch size. It has a big open hopper designed to take a choke feed without hand or mechanical feeding. The discharge is from the bottom, by gravity, without centrifugal action and without clogging of discharge chute. This crusher has a *steel* frame, *steel* crown, and rigid *unbreakable* shaft, *all three guaranteed against breakage*—automatic lubrication—big oil reserve. Umbrella-shaped head permits free discharge, with big output, very low power consumption, and minimum wear on crushing surfaces.

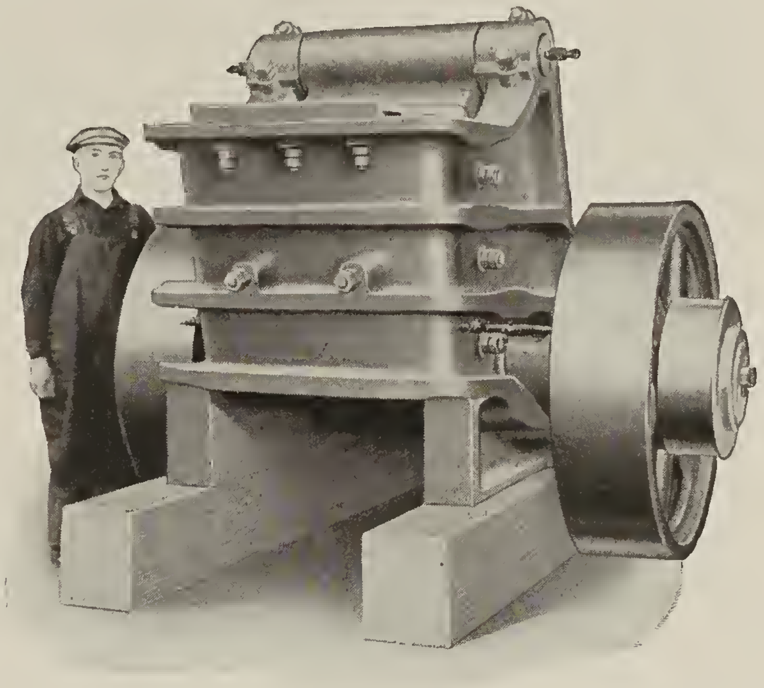
No. of Telsmith Reduction Crusher	32	40	46	52
Maximum size of feed, cubes	4 in.	5 in.	6 in.	7 in.
Minimum discharge opening, inches	¾	1	1¼	1½
Power required, H.P.	25	35	50	65
Weight, lbs., about	10000	19000	27000	43000
Gross weight boxed for export, lbs., about	12000	20500	29000	45000
Cubical contents, boxed for export, cu. ft. about	230	325	450	550
Size of pulley, inches	36x10	42x10	48x14	52x18
Speed of pulley, R.P.M.	550	475	365	320
Approx. capacity with ¾ in. discharge, tons	18 - 21	....	....	....
Approx. capacity with 1⅛ in. discharge, tons	21 - 25	35 - 40	....	....
Approx. capacity with 1⅜ in. discharge, tons	....	40 - 45	57 - 64	75 - 85
Approx. capacity with 1⅝ in. discharge, tons	....	....	64 - 70	85 - 100

TELSMITH JAW CRUSHERS

The Telsmith Jaw Crusher is a breaker of the Blake type, but with the pitman arranged horizontally to act directly on the swinging jaw. Both frame and swinging jaw are of *steel*. This crusher contains no toggles — no tumblers — no eccentric rollers. Only three parts act in the crushing cycle—the pitman, the swinging jaw and its die plate. There are but six bearings, including the seat of the pitman against the swinging jaw.

The frame is walled and ribbed very heavily. It is very short—almost cubical in dimensions; and in practice has proven practically unbreakable. The jaw dies are reversible. They are also interchangeable between the swinging and stationary jaws. Safety set-screws in the fly-wheel hubs protect the machine against breakage by tramp iron.

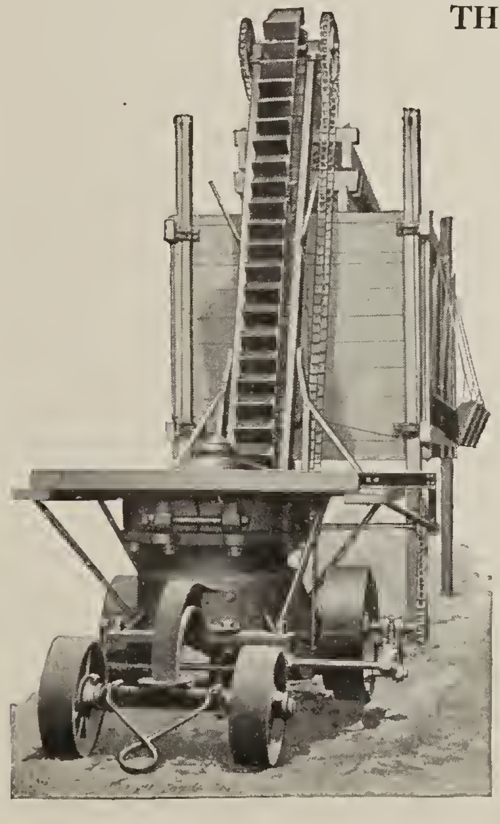
Telsmith Jaw Crushers, sizes 7-A, 9-A and 11-A, are also furnished on truck with steel elevator attached.



Number of Telsmith Jaw Crusher	**7-A**	**9-A**	**11-A**	**15-A**
Size of feed opening, inches	7x12	9x16	11x20	15x24
Smallest bottom opening advisable, inches	⅞	1⅛	1½	2
Largest bottom opening, inches	1¼	1¾	2¼	3¾
Speed of driving pulley, R.P.M.	350	300	280	250
Size of pulley, inches	32x8	32x8	42x10	48x12
Power required, crusher only, on limestone, under normal conditions	12	18	22	30
Approximate weight, on skids, pounds	3600	6000	9600	17000
Approximate weight, crated for export, pounds	4000	6600	10600	18500
Cubical contents, crated for export, cubic feet, about	65	169	225	350
Capacity per hour, tons	3 - 5	8 - 12	15 - 23	25 - 37
Size of elevator required (for crusher output only)	2	3	3 or 4	4 or 5

TELSMITH MOUNTED BREAKER

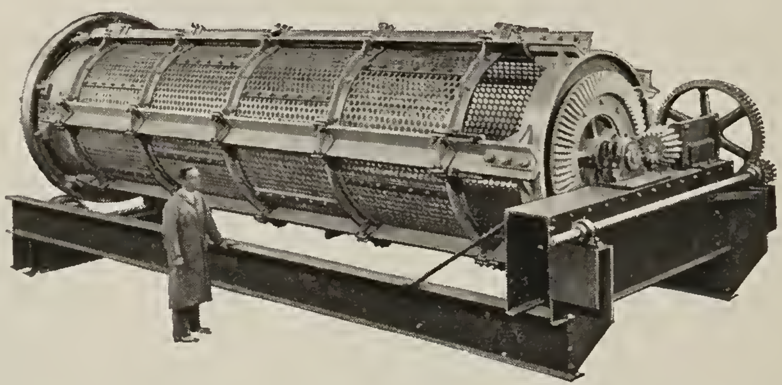
THE NATIONAL ROAD-BUILDER



The modern road job requires a big husky crushing plant. At the same time, portability is important. Telsmith is the only mounted breaker combining large output with mobility. Telsmith goes to the job. Even the big No. Ten-A is portable in fact, not merely in name, while the No. 6-A weighs well under ten tons. The feed level is low, ranging from 6 ft. 4 in. on the No. 10-A, down to 5 ft. 1½ in. on the No. 6-A. Telsmith capacity is huge. Many operators of the No. 10-A machine report runs of 350-400 cu. yds. in ten hours, while the average output of the Telsmith Mounted Breaker is always substantially greater than that of other crushers of corresponding size.

Number of Mounted Breaker	**6-A**	**8-A**	**10-A**
Dimensions of each receiving opening	6¼″x35″	8″x41″	10″x51″
Capacity per hour, tons	12–16	22–26	28–40
H.P. recommended for complete outfit crushing limestone	20	25	30
Size of driving pulley	32″x10″	36″x10″	40″x10″
Speed of driving pulley, R.P.M.	475	450	425
Size of elevator buckets, inches	11x6½x11¾	13x7x11¾	15x7½x11¾
Weight of mounted crusher, with 25 ft. elevator, lbs., about	16500	22000	29500

TELSMITH-HERCULES SCREEN



Efficiency and economy were the sole objectives in designing the Telsmith Hercules Screen—the most striking improvement in screening practice in many years. These exclusive features speak for themselves: (a) rigid steel under-frame made of Bethlehem I-Beams; (b) all journals, including rollers, main drive gear and countershaft, equipped with Timken Tapered Roller Bearings; (c) improved screen plates, made to template, replaceable without drilling; (d) reinforcing segments between screen plates, which can be shifted longitudinally without drilling the angles; (e) unusually heavy angles, gears, headring and rollers. The extra rigid construction of the Hercules screen makes it feasible to extend it to greater length than other rotary screens of lighter design; (f) the perforations can be rearranged without machine work. A jacket can be added, a scrubber may be installed and screen sections changed as to length and arrangement—all without drilling.

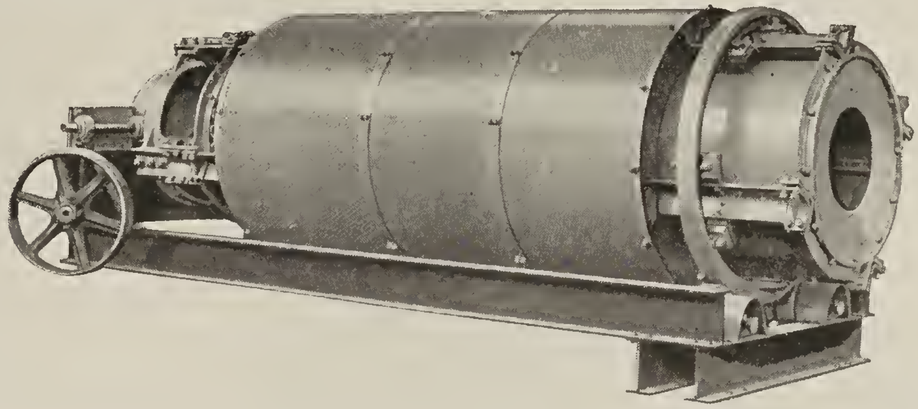
Diam. of Telsmith-Hercules Screen, inches	**32**	**40**	**48**	**60**	**72**
Basic length for computing weight, feet	8	10	12	12	12
Weight of basic length, pounds, about	3800	6300	10600	14850	18800
Additional weight per foot, pounds	165	225	305	430	600
Weight of sand or dust jacket, per ft., lbs., about	70	95	110	135	160
Inside diameter of dust jacket, inches	47	59	69	84	100
Maximum length of screen permissible, feet	16	18	20	22	24
Length of blank section, inches	20	24	26	30	36
Thickness of material in main cylinder, inches	¼	¼	5/16	⅜	½
Speed of cylinder, R.P.M.	16	14½	13½	12	9½
Size of driving pulley, inches	30x6	36x8	42x10	48x12	60x12
Speed of driving pulley, R.P.M.	57	52	55	48	40
Horsepower required	3–5	5–8	7–10	10–15	15–20
Pitch recommended, inches per foot of length	1¼	1¼	1¼	1¼	1¼

TELSMITH BELT ELEVATORS

Telsmith Belt Elevators are now regularly furnished with all-steel frames. Heavy channels, instead of timbers, with steel cross members, assure a ***rigid structure.*** Warping, cracking, rotting and sagging are avoided. Proper alignment of pulleys, idlers and gears is made easy and permanent. Longer life is assured. Standard belt elevators include pulley and back-gearing, but no jack shaft. Back-gears may be omitted and jack shafts substituted for direct drive to the elevator head, if preferred. Buckets are of thick tough steel plate, carefully made and well riveted. Special buckets are furnished where desired. Belt is made of heavy duck, thoroughly impregnated and cemented with rubber, the product of a leading manufacturer of rubber goods, who guarantees it.

Number of Elevator	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Size of buckets, inches	9x5x7⅝	11x6½x11¾	13x7x11½	15x7½x11¾	17x9½x13½	22x10x13½	26x11x15	30x12x16
Gauge of steel, No.	14	14	12	12	10	10	10	8
Width of belt, inches	10	12	14	16	18	24	28	32
Speed of belt, ft. per minute	175	175	175	175	175	175	175	175
Size of head pulley, inches	20x12	20x14	22x16	24x18	30x20	30x26	36x30	42x34
Size of foot pulley, inches	20x11	20x13	22x15	22x17	26x19	26x25	30x29	36x33
Spd. of head shaft, R.P.M.	33	33	30	28	23	23	19	16
Spd. of back gear shaft R.P.M.	132	132	156	146	125	125	105	88
Drive pulley, inches	30x6	30x6	36x8	36x8	42x10	48x10	48x12	56x12
Capacity per hr, cubic yds.	25	35	50	70	100	145	200	300
H.P. rqrd by 30′ to 50′ elev.	4	5	6	8	11	20	30	40
H.P. rqrd by 50′ to 70′ elev	5	7	9	11	16	28	40	56
Weight of 30′ elevator complete, lbs. about	2150	2400	3550	3950	5750	6600	7500	12500
Adtnl weight of complete elevator, per ft, lbs. about	45	50	65	75	105	125	150	215
Weight of 30 ft. elev., without frame, lbs., about	1550	1650	2650	3050	4200	4900	6000	9700
Adtnl weight of elev. per ft. without frame, lbs., about	25	27	38	47	60	75	95	135

TELSMITH-HERCULES WASHER



In the Telsmith-Hercules Washer, the big rock is utilized to disintegrate extraneous matter in the gravel, particularly clay. The scrubber is divided into two compartments, separated by retainer rings which readily pass the smaller aggregate but retard the bigger boulders. In the first compartment, which is blank, the material is cascaded, soaked; the dirt is detached and softened. In the second compartment, the sand and dirty water are drained off leaving the big rock unhampered in grinding up any residue of undissolved clay. Sprays are used to facilitate the ball-milling process.

Both sections of the scrubber are equipped with scrubbing chains to give greater scrubbing and scouring action.

The Telsmith-Hercules Washer is the only standard washing screen equipped throughout with Timken Tapered Roller Bearings. The result is economy of power, perfect exclusion of dirt and water, ease in lubrication. It is also equipped with a tandem sand and pea-gravel jacket for sizing fine aggregate. This washer is of *all-steel* construction. A new special method of attaching and supporting screen plates greatly increases the rigidity of the screen barrel and makes the sections easily replaceable without drilling, even with changed lengths. Roller ring and rollers are of high carbon steel. All gears and bearings are housed.

Telsmith-Hercules Washer, diam., inches	**32**	**40**	**48**	**60**	**72**
Standard length of main cylinder, feet	12½	14	16½	19	22
Weight of standard length, lbs., about	5200	8200	13400	20000	28000
Weight of added length per foot, lbs., about	165	225	305	430	600
Standard length of scrubbing section, feet	6½	7	8½	10	12
Standard length of first jacket, feet	5	6	6	7	9
Standard length of second jacket, feet	4	4	4	5	5
Number of products, including sand and oversize, std. length	4	4	4	4	4
Maximum length of washer permissible, feet	16½	18	20½	22	25
Thickness of material in main cylinder, inches	¼	¼	5/16	⅜	½
Speed of countershaft R.P.M.	57	52	55	48	40
Size of driving pulley, inches	30x6	36x8	42x10	48x12	60x12
Horsepower required	3–5	5–8	7–10	10–15	15–20
Water required, G.P.M., up to	350	700	1200	2000	2800
Capacity per hour, cubic yards	25–30	50–60	90–100	150–160	210–230
Pitch recommended, inches per foot of length	1¼	1¼	1¼	1¼	1¼

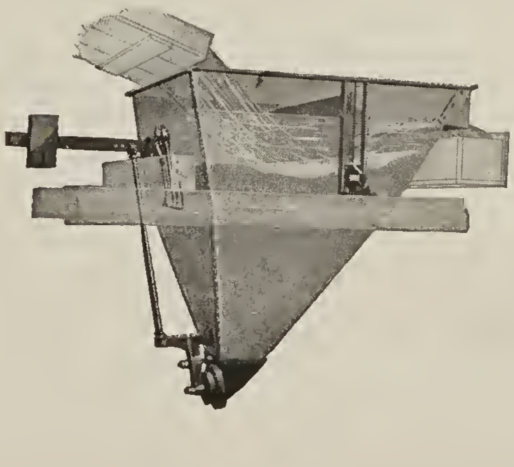
TELSMITH SAND TANKS

DEWATER THOROUGHLY, GUARANTEED AUTOMATIC

Telsmith Sand Tanks separate the clean sand from the dirty water. Being heavier than loam, the sand settles to the bottom of the tank, while the dirty water flows off over the spillway. When a sufficient volume of sand has accumulated in the tank, the hopper pivots on the knife-edge bearings which support it. The valve plate swings in the *opposite direction;* and a portion of the sand is discharged. As the whole operation is almost instantaneous, very little water escapes with the sand. The Telsmith Sand Tank is positively guaranteed to work automatically, with no hand labor and without supervision. It dewaters within 25%, discharging only 5% of free water.

The Telsmith Sand Tank is widely used for classifying sands into grades of different fineness. For this purpose, two or more sand tanks may be arranged in series, so that the first and smaller tank catches the coarse aggregate, while the dirty water is discharged into larger tanks for recovery of the fine sands.

Number of Telsmith Sand Tank	**5**	**6**	**7**	**8**
Cubical contents, cu. ft.	50	80	120	155
Capacity in coarse sand, cu. yds. per hour, about	15	25	35	50
Capacity in fine sand, cu. yds. per hour, about	7–10	12–16	18–23	25–30
Weight of tank empty, pounds	750	1200	1450	1650
Weight of tank full, pounds	4700	7500	11000	14000
Water capacity, G.P.M., catching coarse sand	300	500	800	1100
Water capacity, G.P.M., catching fine sand	225	375	525	825
Pitch of feed launder or flume, recommended	5° to 10°	5° to 10°	5° to 10°	5° to 10°
Width of feed launder or flume, recommended	3′-6″	4′-0″	4′-6″	5′-6″



TELSMITH BELT CONVEYORS

Telsmith Belt Conveyors are specially designed for the severe service requirements of mill, quarry and gravel pit. The troughing idler unit is bolted to a wood base. Cast iron idler rolls turn on shafts of seamless steel tubing. The guide idlers are each mounted on a cast iron base, with a shaft of steel tubing, tapped for a grease cup. The return idlers are attached to cold rolled steel shafts, turning in closed-end babbitt boxes. All idlers are equipped for pressure lubrication unless grease cups are preferred.

We also furnish the Telsmith-Stearns Conveyor Idler, equipped with Timken Tapered Roller Bearings. This type of idler is very popular among the larger commercial plants, by reason of its economy in power and belt consumption.

Width of Belt Inches	No. of Pulleys in Troughing Idler Unit	Hourly Capacity in Cubic Yds. @ 250 ft. per min. Mat. @ 100 lbs. per cu. ft.	H.P. for 200′ Conv. on level (same speed)	H.P. for 200′ Conv. at 18° incline (same speed)	Max. Size of Lumps inches	Spacing of Troughing Idlers
16	3	65	4	10	5	5′-0″
18	3	85	5	13	6	4′-6″
20	3	105	6	16	7	4′-6″
24	5	155	7½	23	8	4′-0″
30	5	240	10	34	10	4′-0″
36	5	350	14	48	13	3′-6″

Maximum belt speed on gravel and stone is 300 feet per minute. Multiply capacity specified above according to speed of travel.

TELSMITH PLATE FEEDER

The Telsmith Plate Feeder will take stone or gravel from a steam shovel, clam shell, drag-line bucket or dump car, delivering the material at a fixed rate all day long. This feeder will not only cut the maintenance cost on crushers, elevators and belt conveyors, but it will increase the output and improve the quality of the product.

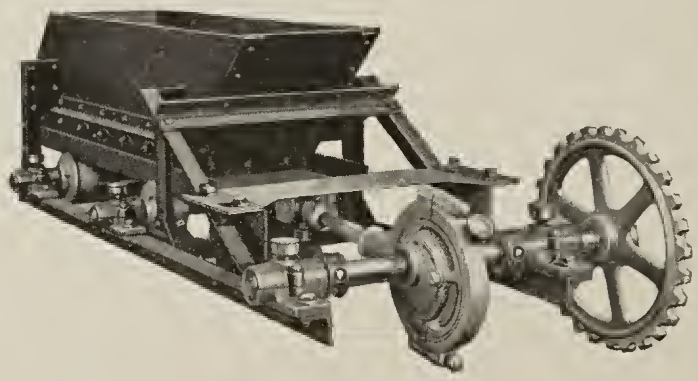
It is very simple, consisting of a flat pan, resting on four rollers and actuated by a cam and connecting rod. The cam imparts a reciprocating motion to the pan, discharging the material from the end of the feeder in a very steady stream. The tonnage delivered can be regulated closely by changing either speed or stroke or both. An eccentric is provided, internal of the cam, to change the length of stroke.

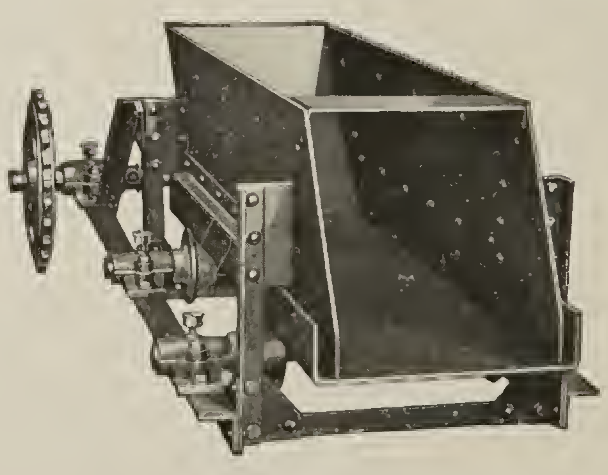
The Telsmith Plate Feeder is furnished as a complete, self-contained unit. At an extra charge it can be equipped with a clutch, so that the operator can disconnect the feeder and stop the flow of aggregate without stopping the plant.

No feeder will do its best work where the aggregate contains any large quantity of free water; but the Telsmith Plate Feeder handles wet aggregate to better advantage than the continuous type.

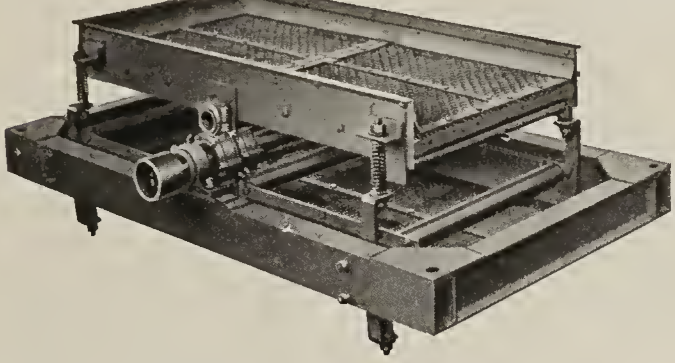
Width of Feeder Plate	Length of Standard Feeder Plate	Weight of Complete Feeder, lbs.	Approximate Capacity 6″ Stroke, 50 R.P.M.	Power Required H.P.
16″	5′-0″	970	50 cu. yds. per hour	1¼
20″	5′-0″	1115	80 cu. yds. per hour	1½
24″	5′-0″	1280	115 cu. yds. per hour	2
30″	5′-6″	1650	175 cu. yds. per hour*	3

*The 30″ feeder is equipped with two eccentrics and connecting rods.





TELSMITH BALANCED VIBRATOR



Here is something *new* in vibrating screen design. Two decks—but the screen surfaces move in opposite directions. By means of opposed eccentrics, the upper screen tray goes up as the lower tray goes down, and vice versa. Not a "dead" or "lazy" spot anywhere on the surface of either tray. Light or heavy loads—it makes no difference. The vibration is ***uniform***—and ***vigorous.***

So smoothly balanced is the opposed movement of the two decks that vibration is confined almost entirely to the screen decks themselves. The frame of the screen receives astonishingly little movement—a decided advantage since excessive vibration renders other vibrating screens quite objectionable for use in many places. The wire screen cloth is fastened firmly in place; but it is not in tension. Since the entire deck is vibrated as a unit there is no crystallization of the wire.

The Telsmith Balanced Vibrator has a large capacity—takes less than two horse-power. Its simple substantial construction and smooth noiseless positive action assure a long life and low maintenance cost.

Shipping weight, Telsmith Balanced Vibrator, 1600 lbs. Size of drive pulley, 6 in. dia. by 4 in. face. Speed of drive pulley, 1200-1400 R.P.M. Horse-power required, 1 to 2 H.P.

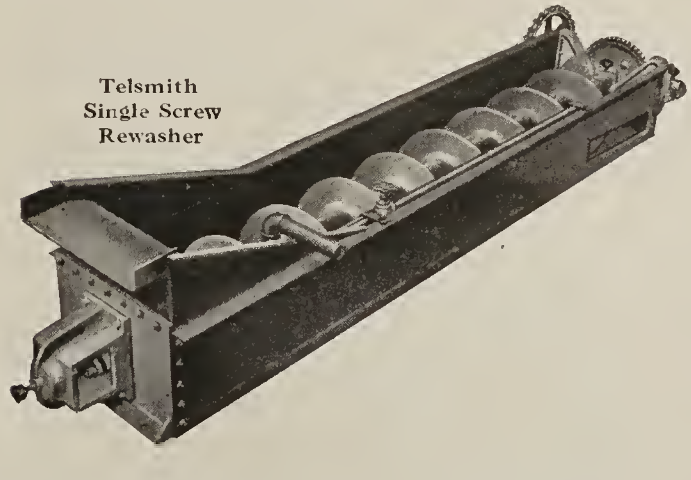
TELSMITH SCREW REWASHER

The Telsmith Single-Screw Rewasher is designed primarily to supplement the Telsmith Sand Tank in pits where the sand contains much dirt or fine sand. It is also used in washing gravel, following the washing screen, to scour and rinse the rock before discharge into the bins. A separate rewasher is required for every size of rock so treated.

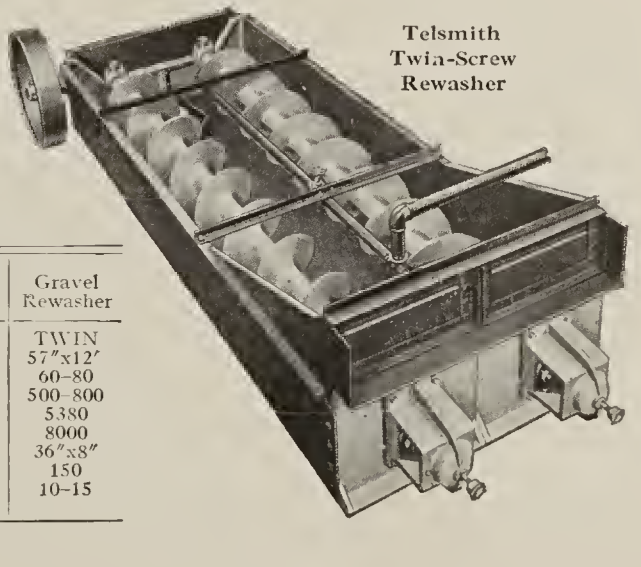
Very striking results have been obtained with both the single-screw and the twin-screw washer, in removing lignite, coal, mica, bark, leaves and trash from river deposits. The action of the screw keeps such elements in suspension, while the sprays prevent them from working upward along the screw. Telsmith Screw Rewashers will deliver a clean product—even where the deposit is very dirty.

The Telsmith Rewasher consists of a steel screw, journalled in an inclined steel plate trough. The screw is made in sections, threaded upon a $2\frac{15}{16}$ in. shaft driven by means of bevel gears at the upper end. The Single-Screw Rewasher is now equipped with side discharge, the vent being a rectangular opening, located substantially above the bottom of the trough. Considerable material must accumulate at the vent before the apparatus begins to discharge. As the top of the pile is well drained, the dewatering process is more complete than in any other sand recovering device.

Where large tonnage is to be handled, we recommend the Telsmith Twin-Screw Rewasher. It is identical with the single-screw outfit in detail and operation, but will deliver double the capacity. The discharge opening is central of the trough; but a low enclosure prevents the discharge of all but dry aggregate.



Telsmith Single Screw Rewasher



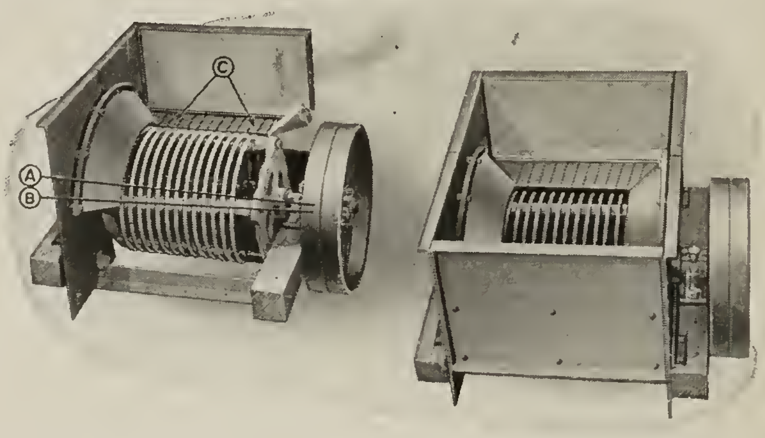
Telsmith Twin-Screw Rewasher

Telsmith Screw Rewasher	Sand Rewasher	Gravel Rewasher	Sand Rewasher	Gravel Rewasher
Number of Screws	SINGLE	SINGLE	TWIN	TWIN
Size of Rewasher	28″x12′	28″x12′	57″x12′	57″x12′
Capacity, cubic yards per hour	25–30	30–40	50–60	60–80
Water capacity, gallons per minute	150–300	250–400	300–600	500–800
Approximate weight empty, pounds	2800	2800	5380	5380
Approximate weight full, pounds	4200	4200	8000	8000
Size of drive pulley	30″x6″	30″x6″	36″x8″	36″x8″
Speed of drive pulley, R.P.M.	105	150	105	150
H.P. required	5	7½–10	10	10–15

TELSMITH ROTARY GRIZZLY

Scalping, frequently is a most puzzling problem, particularly when small aggregate (minus 1 in.-1½ in.) must be removed from a large tonnage. The complications are increased when the aggregate is wet or sticky. In such cases, a stationary grizzly will clog, allowing fines to pass over into the crusher. To cure this difficulty, we recommend the Telsmith Rotary Grizzly.

The grizzly consists of a rotary drum, as shown below, carrying round bars mounted between two end castings. In assembling this device, one of the end spiders is keyed to the shaft. The other disc is left unkeyed until the whole drum is assembled. The loose disc is then twisted around and keyed slightly out of alignment so that the bars, rings and spacers, have a slight spiral movement. Most of the undersize aggregate falls directly through the cylinder. Such pieces as are caught inside the cylinder, travel endwise and are discharged from the end of the cylinder.



No. of Telsmith Rotary Grizzly	30	36	*360
Weight complete, lbs., about	1900	2800	3100
Power required, H.P.	2	2½	2½
Size of pulley, inches	36x7	42x8	42x8
Speed of pulley, R.P.M.	28	22	22
Size of standard rings used, inches	⅞	⅞	1¼
Diameter of rotor shaft, inches	$2\frac{7}{16}$	$2\frac{15}{16}$	$2\frac{15}{16}$
Thickness of steel in casing, inches	$\frac{3}{16}$	¼	¼
Maximum size of material, inches	4	5	8
Hourly capacity, cu. yds. with 1 in. openings, about	30	40	....
Hourly capacity, cu. yds. with 1¼ in. openings, about	35	50	....
Hourly capacity, cu. yds. with 1½ in. openings, about	40	60	60
Hourly capacity, cu. yds. with 1¾ in. openings, about	45	75	75
Hourly capacity, cu. yds. with 2 in. openings, about	55	100	100
Hourly capacity, cu. yds. with 2½ in. openings, about	65	125	125
Hourly capacity, cu. yds. with 3 in. openings, about	75	150	150

* Note 1—The No. 360 Grizzly is same size as the No. 36; but is designed for the handling of rock over 5 inches in size. Wider spacing is necessary in the No. 360.

TELSMITH HINGED CHUTE BIN GATE

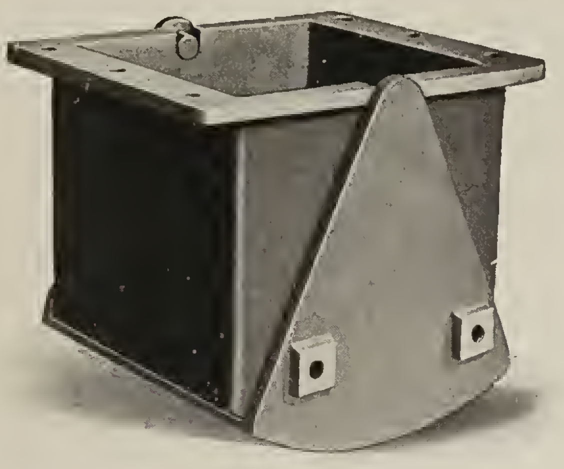
The Telsmith Hinged Chute Gate is an inexpensive but serviceable bin gate. Standard equipment includes bail, rope and sheave, but no counter-weight. This gate is very popular for side discharge of dry materials. For handling washed sand, it should be equipped with a sand-tight slide which is furnished at an extra charge.

Hinged Chute Gate, Size	10″x14″	12″x14″	14″x14″
Thickness of metal	⅛″	⅛″	$\frac{3}{16}$″
Length of stationary Chute	15″	15″	15″
Length of hinged Chute	48″	48″	48″
Weight, pounds	80	90	115

TELSMITH SIQUAD BIN GATE

The most popular side discharge bin gate for loading railroad cars and automobile trucks is the Siquad Gate. It can be operated from any point above or below. It opens and closes easily. The flow of stone can be accurately controlled. It is substantially water-tight. Big tonnages are discharged rapidly. Siquad Gates are furnished with 6 ft. 9 in. wagon-loading chutes or with 9 ft. 3 in. car-loading chutes. If preferred, we furnish the gate with fixed chute only.

Siquad Bin Gate, Size	Thickness of Metal in Chutes	With Truckloading Chute, Wt.	With Carloading Chute, Wt.	With Fixed Chute only, Wt.
12″x18″	$\frac{3}{16}$″	345	430	146
16″x18″	$\frac{3}{16}$″	550	650	185
20″x18″	¼″	595	720	210
24″x18″	¼″	690	815	235



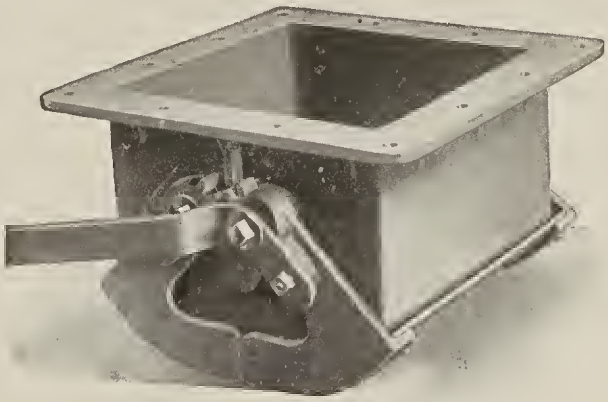
TELSMITH SIMPLEX BIN GATE

The Telsmith Simplex Bin Gate is a single-leaf bottom bin gate, made of cast iron. The illustration shows the liberal use of metal in this gate, assuring long life and reliable service in handling coarse stone. Standard equipment includes only parts shown, the lever and operating rod being provided by the user to suit the dimensions of his storage bin.

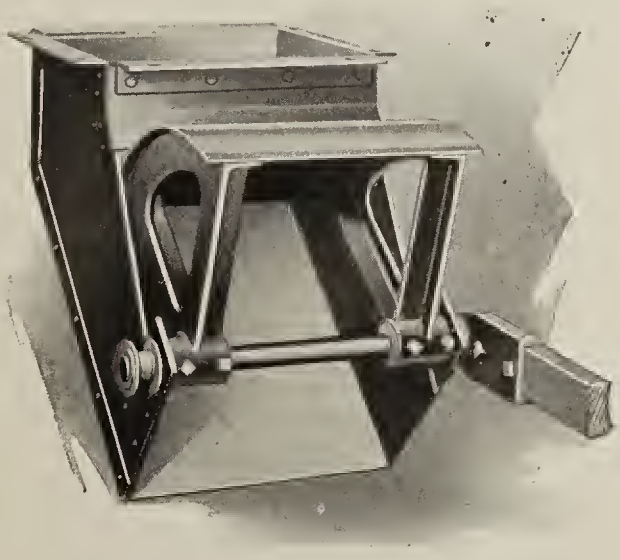
Simplex Bin Gate	Clearance Required, About	Weight, Pounds About	Code-word
12″x12″	15″	180	Grackle
15″x15″	18″	290	Gradation
18″x18″	21″	420	Gradient

TELSMITH DUPLEX BIN GATE

The Telsmith Duplex Gate is a double-leaf gate, designed for rapid bottom discharge into trucks or railroad cars. Both valves are operated by a single lever, by means of gear teeth on the valve jaws. The housing and valve segments are cast iron. The valve plates and lever are of mild steel. This gate has three main advantages: big openings, ease of operation and accurate control of material discharged. This gate is of good, substantial construction—built to satisfy.



Duplex Bin Gate	Clearance Required, About	Weight, Pounds About	Code-word
12″x12″	11″	130	Grenadine
16″x16″	14″	180	Greeting
20″x20″	17″	280	Gregorian



TELSMITH BOQUAD BIN GATE

This picture shows the Telsmith Boquad Gate, a new bin gate which is growing in popularity. It works like the Telsmith Siquad Gate and has the same advantages; but is adapted for bottom discharge. This is a heavy, well-constructed gate, guaranteed for satisfactory service under trying conditions. It has one outstanding appeal to the gravel operator—it can be made more nearly watertight than any other bottom discharge gate.

Boquad Bin Gate	Thickness of Metal	Weight, Pounds About	Code-word
12″x18″	1/4″	250	Gustible
16″x18″	1/4″	275	Guardian
20″x18″	1/4″	300	Guelph

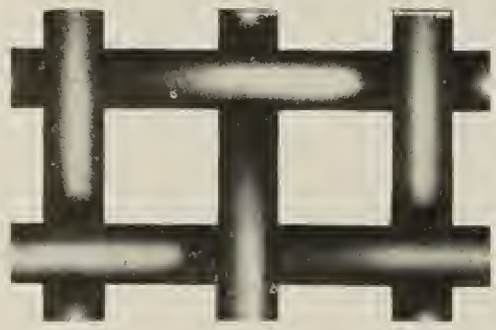
LUDLOW SAYLOR WIRE CLOTH AND WOVEN WIRE SCREENS.

For gravel-sizing screens, stonecrusher screens, portable asphalt plants, coal screens, sand screens, locomotive spark arresters, refuse burners, etc., etc.

Square Meshes

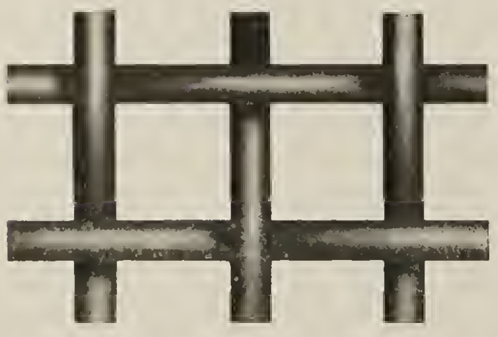
Woven Wire Screens with square openings have much greater capacity than round-hole screens to pass the same maximum sizes.

This is because the width of the square opening may be smaller than the diameter of the equivalent round hole, to pass the same sizes. Hence a square-mesh woven screen has more openings per square foot, and consequently more opportunities for material to pass through.



½″ Square Opening of No. 3 Wire

Open space 45% of area

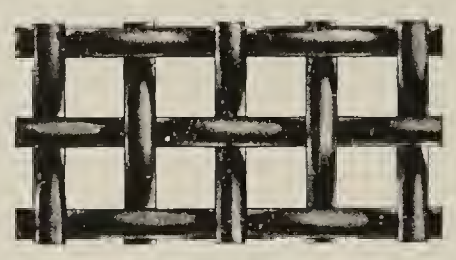


½″ Square Opening of No. 6 Wire

Open Space 52% of Area

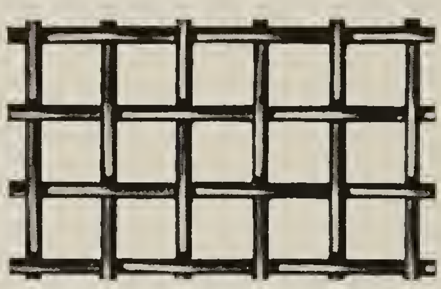
Light grades of wire cloth have more openings per square foot than screens made of heavier wires, but with the same size openings. The lighter grades consequently have greater screening capacity.

The heavier wire screens, however, are much more strong and rigid; they last longer and require less attention.



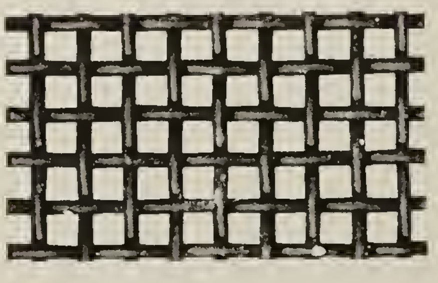
¼″ Opening of No. 11 Wire

Open Space 46% of Area



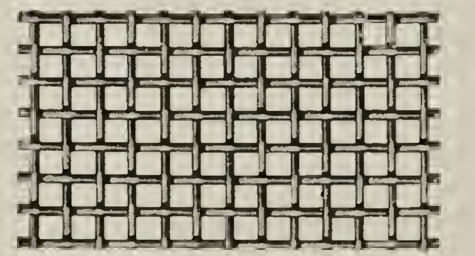
¼″ Opening of No. 14 Wire

Open Space 58% of Area



⅛″ Opening of No. 14 Wire

Open Space 36% of Area



⅛″ Opening of No. 18 Wire

Open Space 52% of Area

ORDER CAREFULLY.

To get the best results from woven screens, consider carefully the weight of the load as well as the screening capacity desired.

Do not expect maximum life from the lightest screens, or maximum tonnage per hour through the heaviest weaves.

Be sure to give full information when ordering screens. Don't forget the following:

1. Number of pieces.
2. Length and width of each piece.
3. Opening between wires.
4. Diameter of wire (preferably in decimals).
5. Material to be used.
6. Template for odd shapes.
7. Rolling or forming data, if any.

No order is complete without the above data. It is often helpful if the purpose of the screen and the nature of its application are described, in addition to the above information.

In repeat orders refer to original order or date of invoice, and request that same be duplicated.

In specifying rolling or forming, the greatest care must be used in specifying size of pieces, allowance for laps, radius or diameter of curvature, and whether measurements are outside or inside diameters, etc.

Short lengths, cut pieces and specially made materials are of no value to us and can not be disposed of or returned. Be sure your specifications are absolutely right.

DOUBLE CRIMPED STEEL WIRE CLOTH STOCK WIDTHS

Note—Prompt factory shipment of 1000 other grades in all widths.

Commercial Designation		Diameter of Wire	Approx. Width of Opening		Weight	Widths Usually Selected for Distributors' Stocks (English Inches)	List Price per Square Foot (Dollars) ⑤
Mesh (Center to Center of Wire) ①	Number of Wire (W & M. Gauge) ②	Decimal of English Inch ①	Fraction of English Inch (Approx.) ①	Decimal of English Inch (Actual) ①	Pounds per 100 Sq. Ft. ④		
*	5/16	.3125	2″*	2.	295	72	.70
	3	.244	1½″*	1.5		48	.65
	6	.192	1½″*	1.5		36–48	40
	3	.244	1¼″*	1 25		48	70
	6	.192	1¼″*	1 25		48	42
	6	.192	1″*	1		36	.50
	3	.244	1″*	1	320	72	.75
*	3	.244	¾″*	.75	400	72	.90
	6	.192	¾″*	75	260	72	.55
	7	.177	¾″*	.75	225	72	.50
*	3	.244	⅝″*	.625	500	72	1.00
	8	.162	⅝″*	.625	225	72	.50
*	3	.244	½″*	5	550	72	1.20
	6	.192	½″*	.5	365	72	.68
	8	.162	½″*	.5	260	72	.55
	9	.148	½″*	.5	220	72	45
*	4	.225	⅜″*	.375	600	72	1.10
	6	.192	⅜″*	.375	470	72	.80
	8	.162	⅜″*	.375	340	72	.60
*	6	.192	¼″*	.25	600	72	1.10
1″	6	.192	13/16″	.808	245	36	.55
1″	8	.162		.838	185	36–72	.40
1″	9	.148		.852	155	36–72	.35
1″	10	.135	⅞″	.865	120	36–48–72	.30
1″	11	.120		.880	100	36–72	.25
1″	12	.105		.895	76	36–48–72	.22
¾″	9	.148		.602	200	36–72	.40
¾″	10	.135	⅝″	.615	165	36–72	.35
¾″	12	.105		.645	100	36–48–72	.25
¾″	14	.080		.670	55	36–48	.18
⅝″	9	.148		.477	235	36–72	.45
⅝″	10	.135		.490	190	36–48–72	.40
⅝″	11	.120	½″	.505	155	48	.35
2	8	.162	⅓″	.338	350	36–48	.60
2	9	.148		.352	290	36–48–60	.55
2	10	.135		.365	230	36–48–60	.45
2	11	.120	⅜″	.380	190	36–48	.40
2	12	.105		.395	140	24–30–36–42–48	.35
2	14	.080		.420	85	24–30–36–42–48	.20
2	15	.072		.428	70	36	18
2	16	.063	7/16″	.437	53	24–30–36–42–48	17
2½	9	.148	¼″	.252	370	36–48	.60
2½	10	.135		.265	300	36–42–48–60–72	.55
2½	11	.120	9/32″	.280	235	36	.45
2½	12	.105		.295	180	36–48	.38
2½	14	.080	5/16″	.320	105	36–48	.25
2½	15	.072		.328	85	48	.20
2½	16	.063	⅓″	.337	65	48	.18
2¾	11	.120	¼″	.244	260	36	.50
2¾	12	.105	¼″	.259	190	36–48	.42
3	9	.148	3/16″	.185	445	48	.75
3	10	.135		.198	365	36–48	.60
3	11	.120		.213	290	36–48	.55
3	12	.105		.228	220	24–36–42–48	.45
3	13	.092		.241	165	30–36–48	.38
3	14	.080	¼″	.253	125	24–30–36–42–48	.35
3	16	.063		.270	77	24–30–36–42–48	.20
3	18	.047		.286	45	30–36	.14
3½	12	.105	3/16″	.181	260	36–48	.55
4	10	.135		.115	470	36	1.00
4	11	.120	⅛″	.130	370	36–48	.75
4	12	.105		.145	295	36–48	.60
4	13	.092	5/32″	.158	225	36	.52
4	14	.080		.170	168	24–30–36–42–48	.42
4	16	.063	3/16″	.187	100	24–30–36–42–48	.27
4	18	.047		.203	62	24–30–36–42–48	.19
4	20	.035		.215	33	24–30–36	.13
5	12	.105	3/32″	.095	360	36–48	.85
5	13	.092		.108	275	36	.65
5	14	.080	⅛″	.120	212	36–42–48	.55
5	15	.072		.128	168	36–48	.50
5	16	.063		.137	130	24–30–36–48	.40
5	17	.054		.146	95	36	.30
5	18	.047	5/32″	.153	75	36–42–48	.25
5	19	.041		159	55	36	.22
5	20	.035		.165	40	36	.17
6	14	.080		.087	250	24–30–36–48	.60
6	15	.072	3/32″	.095	200	24–36–48	.55
6	16	.063		.104	150	24–30–36–48	.50
6	17	.054		.113	115	36	.40
6	18	.047	⅛″	.120	88	24–30–36–48	.30
6	20	.035		.132	48	24–30–36	.22
7	15	.072		.071	235	24–48	.60
7	16	.063		.080	180	36–48	.55
7	17	.054		.089	135	36–48	.50
7	18	047		.096	105	36–48	.40
8	16	.063	1/16″	.062	200	24–36–42–48	.60
8	17	.054		.071	150	36	.55
8	18	.047	5/64″	.078	120	24–30–36–48	.50
8	19	.041		.084	90	36	.40
8	20	035		.090	65	24–30–36–42–48	.30
8	21	032	3/32″	.093	50	36	.25
8	22	.028		.097	40	36–48	.22
8	25	.020		.105	21	36	.12

The following square-mesh screens pass the same sizes as the round-hole screens shown opposite.

Round Holes	Equivalent Square Openings
2 ″	1¾″
1¾″	1½″
1½″	1¼″
1⅜″	1⅛″
1¼″	1 ″
1 ″	⅞″
⅞″	¾″
¾″	⅝″
⅝″	½″
½″	⅜″
⅜″	¼″
¼″	3/16″

Portable Air Compressors

will simplify your trench work

Your job may be a rock cut on a road contract . . . or a long gas line through busy city streets. Whatever it is, an I-R Portable Compressor outfit will save you time and money. We manufacture a complete line of portable compressors and "Jackhamer" drills; paving breakers and pneumatic diggers; drill sharpeners and oil furnaces; backfill tampers, hoists, and numerous other types of pneumatic tools.

There are six sizes of Ingersoll-Rand Portable Compressors which range in capacity from 66 to 310 cu. ft. per minute—piston displacement at a working pressure of 100 lbs. per square inch.

I-R machines will pay for themselves within a few weeks of steady operation. Let us show you how they will save money for you.

Ingersoll-Rand

232-PC

Left: This long pipe line trench, most of it through rocky ground, was put down rapidly with the aid of I-R Portable Compressors and "Jackhamer" Drills. The line traverses an 18-hole golf course in Westchester County, New York.

INGERSOLL-RAND AIR COMPRESSORS

(Belt and Steam Drive)

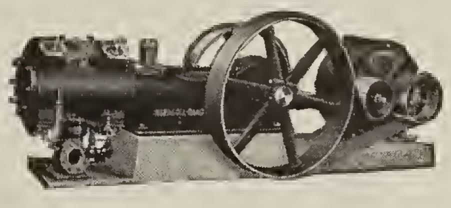
The history of air compressors is essentially a history of Ingersoll-Rand Company, which began manufacturing these machines nearly sixty years ago. From that day to this, I-R has occupied a place of leadership in the compressor field.

Throughout the intervening years, specialists have been unceasingly at work improving and adding to the line of I-R compressors. Wherever and whenever compressed air problems have arisen, Ingersoll-Rand has blazed the trail to their solution. No matter what the demands have been, there have been men and resources to meet them.

As a result of this extensive research and development, Ingersoll-Rand today makes more than 1,000 sizes and types of compressors. Particular attention has been given to the small and medium-sized units—a class of machines that furnish a large portion of the compressed air consumed in the world. It is machines of this type that are described on this and the following pages.

There are more "ER" and "FR" (medium size) compressors in use today than any other type on the market. This fact, in itself, is a powerful endorsement of them. Such popularity can come only from highly satisfactory performance.

Class "ER-1" Belt-Driven Compressors



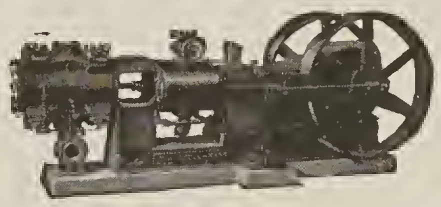
Single-stage, double-acting, straight-line type. These compressors can be furnished with short-belt drive and with motor and control to suit any electric current condition; with tight-and-loose pulleys for shaft drive; direct-connected to our "PO" Oil Engine, or direct-connected to electric motor. Made insizes as shown below.

CLASS ER-1 STRAIGHT-LINE, BELT-DRIVEN AIR COMPRESSORS

Air Pressure Up to 150 Pounds

Size of Cylinder, Inches		Revolutions per Minute	Piston Displacement Cu. Ft. per Minute	Air Pressure Maximum Continuous
Diameter	Stroke			
4	4	500	28	150
5	4	500	44	110
6	4	500	64	50
5	5	400	44	150
6	5	400	64	110
7	5	400	88	60
6	6	350	67	150
7	7	350	107	100
8	6	350	120	55
9	6	350	153	40
12	6	350	273	15
8	8	300	136	130
9	8	300	173	100
10	8	300	215	75
12	8	300	311	45
14	8	300	424	25
10	10	285	254	125
12	10	285	368	100
14	10	285	503	60
17	10	285	745	30
12	12	250	386	115
14	12	250	528	100
17	12	250	782	55
20	12	250	1084	35

Class "FR-1" Steam-Driven Compressors

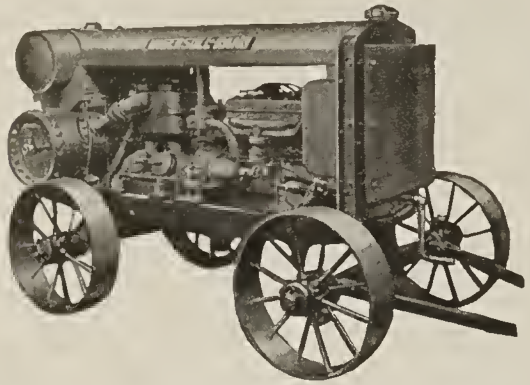


Single-stage, double-acting, straight-line type. The air cylinder is direct-connected to a steam cylinder having balanced piston valves with automatic cut-off fly-wheel control governor. This arrangement makes it possible to operate with high pressures and superheated steam, as well as with moderate pressures and saturated steam. This compressor is made in sizes as follows:

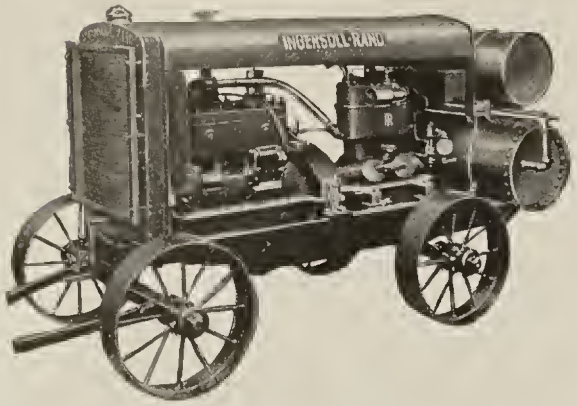
CLASS FR-1 STRAIGHT-LINE, STEAM-DRIVEN AIR COMPRESSORS

Air Pressure 10-125 Lbs.
Steam Pressure 80-250 Lbs.

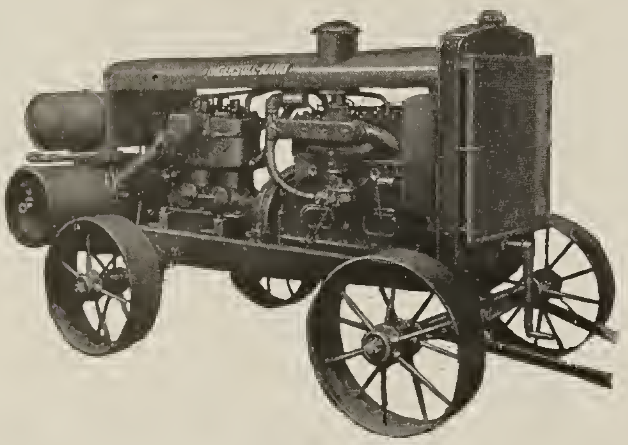
Size of Cylinders, Inches					Revolutions Per Min.	Piston Displ. Cu. Ft. per Min.	Air Pressure Max. Continuous
Diameter							
Steam			Air	Stroke			
Steam Pressure, 80-120 lbs.	Steam Pressure, 125-175 lbs.	Steam Pressure, 180-250 lbs.					
7	6	5	6	6	350	67	135
7	6	5	7	6	350	92	100
7	6	5	8	6	350	120	55
7	6	5	9	6	350	153	40
7	6	5	12	6	350	273	15
9	8	6¾	8	8	300	136	130
9	8	6¾	9	8	300	173	100
9	8	6¾	10	8	300	215	75
9	8	6¾	12	8	300	311	45
9	8	6¾	14	8	300	424	25
12	10	8¼	10	10	285	254	125
12	10	8¼	12	10	285	368	100
12	10	8¼	14	10	275	503	60
1	10	8¼	17	10	285	745	30
14	12	10	12	12	250	386	125
14	12	10	14	12	250	528	100
14	12	10	17	12	250	782	55
14	12	10	20	12	250	1084	35



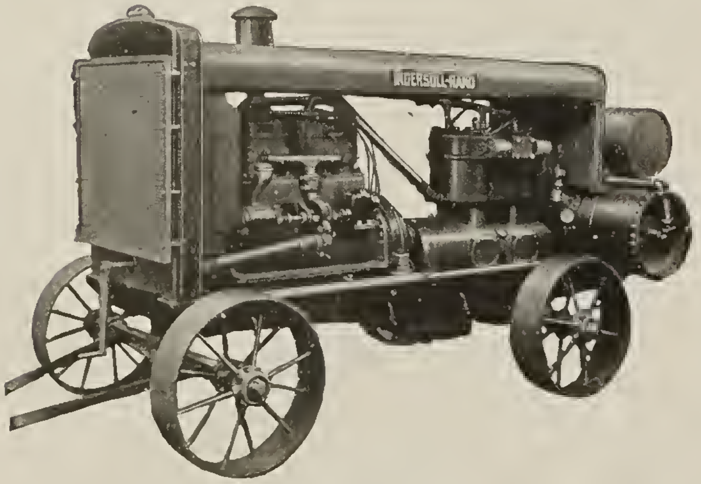
4" Stroke Type Twenty Portable Compressor mounted on steel wheels and steel axles.



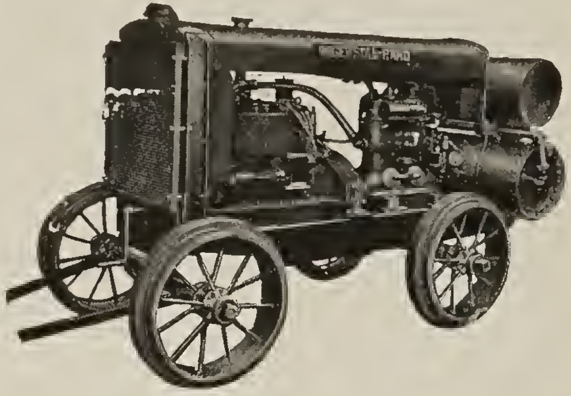
5" Stroke Type Twenty Portable Compressor mounted on steel wheels and steel axles.



6" Stroke Type Twenty Portable Compressor mounted on steel wheels and steel axles.



8" Stroke Type Twenty Portable Compressor mounted on steel wheels and steel axles.



Steel wheels with solid rubber tires.

INGERSOLL-RAND

Portable Air Compressors

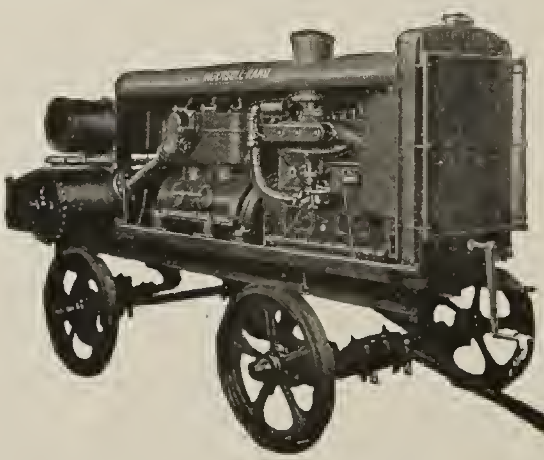
Gasoline - Engine and Electric— Motor-Driven

The Ingersoll-Rand Portable is, without doubt, the most highly developed portable air compressor plant built today. Service records of thousands of these units in the field characterize the I-R Portable as the most rugged, compact, and efficient plant available. During field service a contractor cannot afford the risk of shutdowns and delays in his work. An attempted saving in first cost usually proves an expensive economy when all the factors are considered.

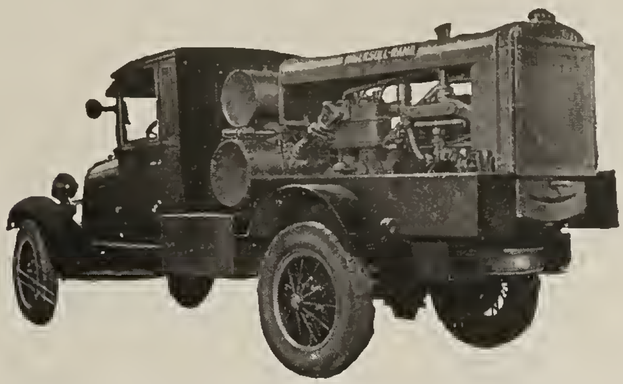
A very rigid cast-steel frame of special design is used in each portable. On this are mounted the duplex vertical compressor, with regulator; the gasoline engine (or electric motor); the air receiver, with its gauge and hose connections; the closed circuit cooling water system for both the compressor and the engine; and the radiator, fan, pump, and fuel tank. It is a complete plant. Nothing is lacking; it is ready to go to work as soon as the fuel, water, and oil are supplied.

There are six sizes of I-R Portables, each driven by a four-cylinder, four-cycle Waukesha Motor with Ricardo Head. This means that there is an I-R Portable to suit your exact requirements.

The fact that one type of engine is standard for all sizes makes it possible to give customers a highly specialized



I-R Trailer Mounting



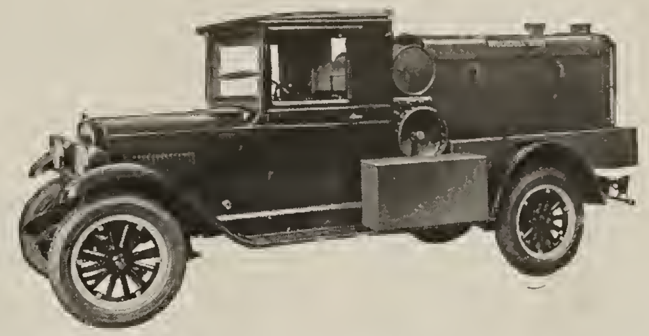
Compressor mounted on one-ton Ford truck Chassis. Outfit is complete as shown with rear mud guards, tool boxes, etc.

service. The Ricardo Head is furnished on each motor used with the I-R Portable. Its use means lower fuel consumption and increased horsepower.

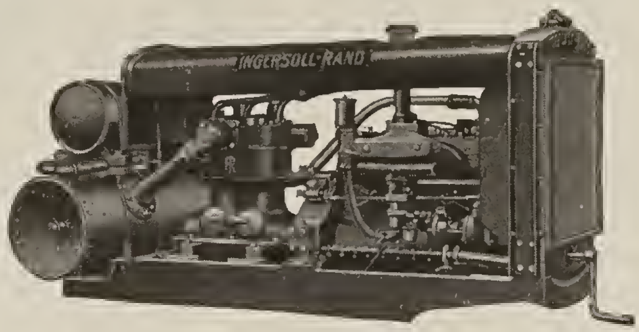
All sizes are furnished with the "Airsealed" Unloader. This unloader is air-tight, is positive in operation, and works automatically. It is made entirely of non-corrosive metal. Heat, oil, and moisture do not affect its operation. There is nothing to wear out. The few moving parts are made of metal.

Aftercoolers are also regularly furnished. They insure a longer life for the air hose by reducing the temperature of the air after it leaves the air receiver.

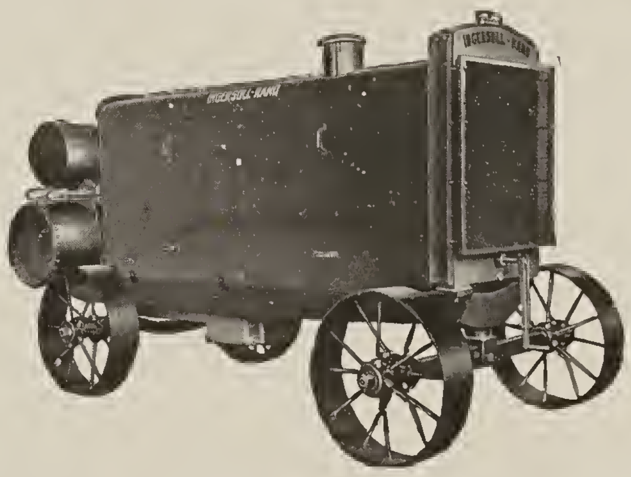
I-R Portables are available on the following mountings: steel wheels and axles; steel wheels with solid rubber tires; I-R trailer; full Highway Trailer; without running gear for mounting on skids or motor truck; and, in the case of the two smaller sizes, on a standard two-wheel Highway Trailer, Ford Truck, or Chevrolet Truck. With this variety of mountings, the purchaser will find a unit which will exactly answer his requirements.



Compressor mounted on Chevrolet Truck. Outfit is complete as shown with rear mud guards, tool boxes, etc.



Unit without running gear for mounting on wooden skids, truck, or railway car.



A steel roof and removable steel doors completely enclose the outfit.

INGERSOLL-RAND TYPE TWENTY PORTABLE GASOLINE-ENGINE-DRIVEN COMPRESSORS

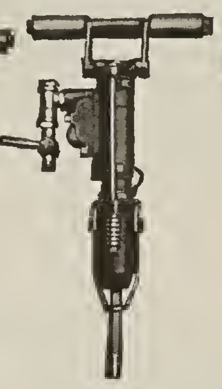
Standard single-stage machines for 100-pound spressure.

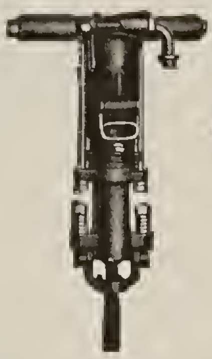
Size of Air Compressor, Inches		Style of Drive	Piston Displacement, Cubic Feet per Minute	Compressor on Steel Wheels					
				Weights		Overall Dimensions, Feet and Inches			Approximate Cubic Feet Boxed for Export
Bore	Stroke			Net	Boxed for Export	Length	Width	Height	
4¾	4	Direct Coupled	66	2285	2835	7–6	4–7	4–6	120
5½	5	Direct Coupled	110	3185	3810	8–4	4–7	5–0	157
7	6	Direct Coupled	160	5135	6425	10–7	5–11	6–2	315
8	6	Direct Coupled	220	5740	7030	10–7	5–11	6–2	315
9	8	Reduction Gear	265	7125	8625	11–7	5–11	6–8	402
10	8	Reduction Gear	310	8325	9950	11–9	5–11	6–10	421

"JACKHAMER" ROCK DRILLS

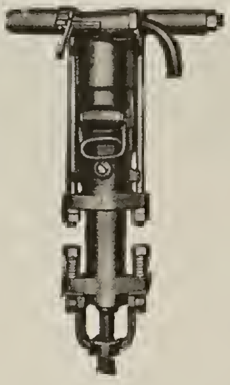
BAR-33

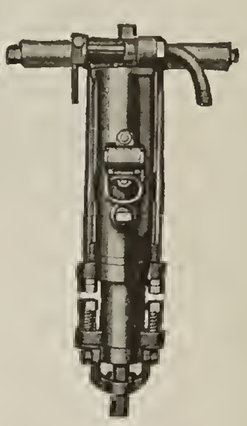
BBR-13


BCR-430


R-39

DCR-23


S-49


X-59

"JACKHAMER" AUTOMATIC ROTATION DRILLS

Type	Recommended for	†Standard Steel	Length with Steel holder	Weight, Lbs.	
				Complete with fittings	Boxed (Appr.)
BAR-33	For use where lightness and adaptability are the chief considerations. Suited for drilling in ordinary rock to a depth of 4 to 6 feet. Particularly adapted to drilling the smaller anchor bolt holes in concrete.	7/8" Hollow Hex.	17¼"	28	39
BBR-13	Offered in preference to the BCR-430 where the problem is one of rotation and where light weight is desirable. It combines light weight with high drilling capacity and maximum power of rotation. Particularly suited for drilling fast cutting rock.	7/8" Hollow Hex.	20½"	40	52
BCR-430	The original "Jackhamer." The best known and most widely used tool on the market. Meets the demand for a medium weight machine where easy holding and durability are of primary importance. Gives best results in free cutting rock where a powerful blow is required.	7/8" Hollow Hex.	22¼"	48	62
R-39	The fastest drilling "Jackhamer" in its class. It is suitable for drilling in the average run of rock, which makes it applicable for general utility work in quarries, mines and road work.	7/8" Hollow Hex.	20¾"	43	57
S-49	The fastest drilling "Jackhamer" of the medium weight class. Its excellent hole cleaning ability and its ease of holding give it a distinct advantage in all classes of work for this weight "Jackhamer."	1" Hollow Hex.	23⅜"	57	77
DCR-23	A medium weight machine particularly suited for drilling in hard rock under high air pressures. It is an ideal tool for shaft sinking and general mining work, and is used extensively in quarries and in tunnel bench work.	1" Hollow Hex.	24"	58	90
X-59	Recommended wherever deep holes are to be drilled with "Jackhamers" in any kind of rock. It should be offered for all those cases where we have previously recommended the DDR-13.	1" Hollow Hex	24½"	72	96

Selecting the Drill

In selecting the proper rock drill for a job, one should carefully consider the many factors that govern the success of such a machine. Present-day drills are designed to meet specific conditions, and for maximum operating efficiency the correct drill should be selected to meet your customer's requirements.

A preliminary study of formation to be drilled will usually determine the most efficient drill to use. The size and depth of hole, hardness and moisture content of rock, amount of work to be performed, and the speed desired are all important considerations.

The lighter drills are primarily for soft and medium hard rock.

As the hardness of the rock, size, and depth of drill hole increase, portability becomes less of a factor and the heavier drills become more advantageous due to their higher power and cutting speed.

If moisture is present in any considerable amount, the dry blower tools may not be able to raise the cuttings from the drill hole, and in this event the wet drills should be offered.

"Jackhamer" Mountings

While "Jackhamer" drills are primarily for hand work, they have been found thoroughly practical for drifting and stoping in mines and small tunnels, where a combined hand and mounted tool is required.

Ingersoll-Rand Company is prepared to furnish mountings for the drills when they are to be used in this manner. It is but an instant's work to clamp the drill in the carriage of the mounting.

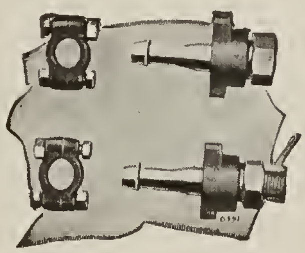
Hand Shanking Device

HSD Hand Shanking Device

The HSD and PSD Hand Shanking Devices have been perfected to aid the shanking of steel where mechanical drill steel sharpening is not available. It assures collars which are perfectly made, and shanks having proper length and true, square ends. Shanks turned out by these devices are equal in every respect to those made upon the power sharpener, but the operation is not so rapid. Accessories are available for each device to permit making all the standard types of "Jackhamer" shanks, where the size and section of the shank is the same as the size and section of the steel. In addition, accessories are available for making Paving Breaker and I-R lug shanks on the PSD shanking device.

Hose Couplings

These improved hose couplings are furnished in ½", ¾" and 1" sizes and are designed and made to give maximum service.



"Jackhamer" Hose Couplings

The coarse "V" thread on the winged take-up nut was specially designed for coupling service. This thread reduces to a minimum any chance of crossing the threads; it assures more rapid take-up than the standard thread, and it will give more wear and will stand up longer.

As shown in the illustration, these couplings can be furnished for the connection of the hose to male pipe or to female pipe. These couplings are standard for all types of "Jackhamer", Drifter and "Stopehamer" Drills.

I-R Paving Breakers

"CC-45"
Paving Breaker.

The lightweight machine is known as the CA-35; the larger size is designated by the symbol CC-45.

Paving Breakers are non-rotating, hard hitting, one-man tools which are designed and built to withstand the severe service to which they are subjected in cutting through hardpan, asphalt, concrete, and rock. Though light in weight and easily portable, they are heavy enough to force their way through any of these materials.

Paving Breakers are operated by compressed air. A contractor's unit usually consists of one or more Paving Breakers and a portable air compressor. The latter is a self-contained power plant that can be operated by either a direct-connected gasoline engine or an electric motor.

Paving Breaker	CA-35	CC-45
Net weight.........	55¾ lbs.	78½ lbs.
Length overall.....	26¾"	27¾"
Diameter of cylinder	1¼" and 2¼"	1⅜" and 2¾"
Working stroke.....	3¼"	4"
Size of inlet........	¾" female	¾" female
Size of hose........	¾"	¾"
Steel used..........	1⅛" hex.	1¼" solid hex.
Size of shank.......	1⅛" x 6"	1¼" x 6"

Ingersoll-Rand Pneumatic Tools

Ingersoll-Rand has developed labor-aiding air tools for a great many operations. Its line of drills, diggers, riveters, saws, hoists, etc., is complete and includes a suitable size and type of machine for every application. Some of these tools and their applications are shown on pages 8 and 9.

Ingersoll-Rand tools and compressors naturally work well together. By purchasing your complete outfit from us, you eliminate divided responsibility and secure the full benefit of our world-wide service organization.

Pneumatic Diggers

These pneumatic tools will do the work of five men using ordinary hand picks. In fact, one man with a Trench or Clay Digger can pick loose enough stiff clay, shale, or hard ground to keep five shovelers busy.

In operation, the blows of the hammer drive the blade into the clay or hard ground so that it is sliced away or pried loose.

The throttle, which controls the operation of the tool, is conveniently located in the grip handle so that the operator almost automatically shuts off the air as the tool is lifted from one position to another. A digging blade is held in the nozzle end of the hammer by the retaining device, which also permits the blade to be removed easily, if so desired. A buffer inside the retaining nozzle takes up the blow of the hammer if the tool should be run while being lifted. These tools are also ideal for trimming roofs and walls in tunnels, and for such work are usually fitted with grip handle.

When used for trench or down work, the Clay Digger has an extension handle, permitting the operator to stand upright. On work of this kind, actual records show 50% to 75% saving over hand methods. The spade can be removed and a pick or chisel substituted for breaking rock, brick, or masonry. See chart page 9.

Backfill Tampers and Sand Rammers

On backfill tamping, the pneumatic tamper enables a workman to do ten times the work he can do by hand. An air tamper strikes 600 hard, snappy blows per minute, ramming the fill down hard.

Working on city streets, packing the backfill in pipe trenches, the pneumatic tamper has many outstanding advantages. The faster work saves time, and the hard blows pack more dirt back into the trench. This eliminates the need for carting away of as much excess dirt. At the same time, when the pavement surface is put down, there is no danger of settlement, which would require subsequent repaving.

INGERSOLL-RAND PNEUMATIC TOOLS

Size B Chipper

Table 1 NON-REVERSIBLE DRILLS

Size No.	Av. Working Speed 90 lbs. Pressure— R. P. M.	Wgt. Lbs.	Length of Feed Inches	Reaming Inches	Tapping Inches	Flue Rolling Inches	Standard Twist Drill will Drive, Inches	Length over-all Inches	Morse Taper Socket	Hose Inches	Distance from side to Center of Spindle, Inches
A	200	57	5	2	2	....	2¼	16⅜	4	¾	3 15/16
AC	174	65	5	2½	2½	....	3	17¼	4	¾	3 15/16
ASE	84	71	5	Extra Heavy Drilling Reaming and Tapping				19	5	¾	3 15/16
B	360	41	4⅝	1	1	....	1¼	14½	3	¾	3⅜
BS	360	42	4⅝	1	1	....	1¼	15⅜	4	¾	3⅜
BSC	249	48	4⅝	1¼	1¼	....	1½	16½	4	¾	3⅜
BSE	112	48	4⅝	2	2	....	2¼	16½	4	¾	3⅜
C	595	27	4⅛	¾	¾	....	29/32	13⅜	2	¾	2 15/16
CS	595	27	4⅛	¾	¾	....	29/32	13⅝	3	¾	2 15/16
CSB	247	30	4⅛	1	†1⅛	....	1¼	14⅝	3	¾	2 15/16
CSC	150	30	4⅛	1¼	†1⅝	....	1¼	14⅝	3	¾	2 15/16
*D	700	14	2½	5/16	....	....	9/16	15	1 or 2	½	1 21/32
*DE	200	17	2½	½	½	....	⅞	19½	1 or 2	½	1 21/32
*6E	375	12	....	½	....	....	⅝	16½	1 or 2	½	1½
*6	1650	10	....	....	....	....	⅜	13⅞	1 or 2	½	1½
*600	1650	11	2½	....	....	....	⅜	15	1 or 2	½	1½
*600E	375	13	2½	½	....	....	⅝	17⅝	1 or 2	½	1½

*Three Cylinder Type †Stay bolt tapping.

Table 2 REVERSIBLE DRILLS

AA	200	66	5	2	2	3½	2¼	16⅜	4	¾	3 15/16
AAC	174	74	5	2½	2½	4	3	17¼	4	¾	3 15/16
AASE	84	80	5	Extra Heavy Drilling, Reaming, Tapping and Flue Rolling				19	5	¾	3 15/16
AASH	30	159	....					24¾	...	¾	4½
BB	360	44	4⅝	1	1	2½	1¼	14½	3	¾	3⅜
BBS	360	45	4⅝	1	1	2½	1¼	15⅜	4	¾	3⅜
BBSC	249	50	4⅝	1¼	1¼	3	1½	16½	4	¾	3⅜
BBSE	112	50	4⅝	2	2	5½	2¼	16½	4	¾	3⅜
CC	595	29	4⅛	¾	¾	....	29/32	13⅜	2	¾	2 15/16
CCS	595	30	4⅛	¾	¾	....	29/32	13⅝	3	¾	2 15/16
CCSB	247	33	4⅛	1	†1⅛	2¼	1¼	14⅝	3	¾	2 15/16
CCSC	150	33	4⅛	1¼	†1⅝	....	1¼	14⅝	3	¾	2 15/16
*DDE	200	19	2½	½	½	....	⅞	20	1 or 2	½	1 21/32
‡DEA	75	33	....	Nut tightening, up to 1¼″ Bolts				4 13/16	...	½	2¼

†Stay bolt tapping. *Three cylinder type. ‡Pneumatic Wrench.

Size 6 Drill

Table 3 WOOD BORERS

BBW	360	45	....	....	....	....	x4	18	3	¾	3⅜
CCW	730	26	....	....	....	....	x2	17⅛	2	¾	2 15/16
*DDW	705	15½	....	....	....	....	x1	16⅛	1 or 2	½	1 21/32
*DDExx	200	19	....	....	....	....	x2	20	1 or 2	½	1 21/32

xxSlow speed. *Three cylinder type. xDiam. Wood Bit will drive, inches.

Table 4 CLOSE QUARTER DRILLS

Non-Reversible

80	175	35	2½	1¼	1¼	....	1¼	8¾	3	¾	1 5/16
90	140	41	2½	2	2	....	3	9¼	4	¾	1 9/16
90SC	85	50	4¼	....	Extra Heavy		....	12⅛	5	¾	2⅜

Reversible

99	140	43	2½	2	2	....	3	9¼	4	¾	1 9/16
99SC	85	52	4¼	Extra Heavy				12⅛	5	¾	2⅜
*99	140	46	....	Light R. R. Track Bolting				....	4	¾	1 9/16
*99C	85	59	....	Heavy R. R. Track Bolting				....	...	¾	2⅜
90 Rail Drill	140	80	4	....	....	....	Flat Drill 1¼	30¾	4	¾	....
D Rail Bonding Drill	700	48	2½	....	....	....	Twist Drill 9/16	23¼	...	½	....

*Track Wrench.

8A Riveter

Table 5 GRINDERS AND WIRE BRUSH (3 Cylinder Type)

Size No.	Average Free Speed 90 lbs. Pressure— R. P. M.	Weight Lbs. without Grinding Wheel	Diam. of wheel-end of crankshaft	Length over-all Inches	Carries wheel Diam. x Width x Arbor	Hose Inches	Distance from side to Center of Spindle, Inches
7	3000	23	⅝″	20½	6 x 1 x ⅝″	½	3¼
601	4200	15	⅝″	19¼	4 x 1 x ⅝″	½	2⅝
602	4200	15	⅝″	21⅜	4 x 1 x ⅝″	½	2⅝
601	4200	14	(Wire ⅝″ Brush)	19¼	Brush 6″ dia.	½	2⅝
61	6000	9	½″	18½	4 x 1 x ½″	½	2
62	6000	9½	½″	21¾	4 x 1 x ½″	½	2
63	6000	*16¼	9/16″	23¼	2½ x 6 x 9/16″	½	1⅝

*With Grinding Wheel.

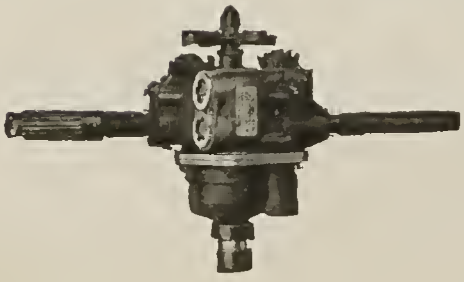
Table 6 MULTI-VANE GRINDERS

3	4200	12¾	⅝″	20⅝	6 x 1 x ⅝″	½	1⅞
3G	4200	12¾	⅝″	19⅞	6 x 1 x ⅝″	½	1⅞

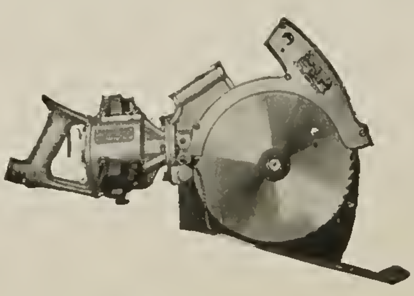
Table 7 SURFACING MACHINE

6G	2000	*13¾	Diam. of wheel-end of Spindle ½″	18⅝	5″ODx2¼″ 1Dx1¼″ thick	½	2½

*With Grinding Wheel.



Size BBSE Drill



Size P12
Safety-First Saw

INGERSOLL-RAND PNEUMATIC TOOLS

Table 8 HOLDERS-ON

Size No.	Piston Stroke Inches	Piston Diam. Inches	Length Exclusive of set Inches	Length Standard Piston Inches	Weight (without Set) Lbs.	Size of Hose Recommended Inches	Rivet Set Shanks	Length Closed Inches	Length Open Inches	Distance Side to Center of Rivet Set Inches
2	3	3⅛	7¼	....	13½	½	1.2165″ diam. by 2¾″ long	9	12	1¾
4	4½	3⅛	12¼	....	25	½		14	18½	1 13/16
5	4½	3⅛	12¼	....	24	½		14	18½	1 13/16

Table 9 RIVETING HAMMERS

1RR	1	1⅛	11	2½	11¾	½	.9345″ diam. by 2½″ long	Drives up to ¼″ hot rivets
2RR	2	1⅛	12	3	12¼	½		Drives up to 5/16″ hot rivets
3RR	3	1⅛	13	3	13¼	½		Drives up to ⅜″ hot rivets
4RR	4	1⅛	14	3	14	½		Drives up to ½″ hot rivets
*4A	4	1 1/16	15	2	15	½	1.2165″ diam. by 2¾″ long	Drives up to 9/16″ hot rivets
*5A	5	1 1/16	16	2½	18	½		Drives up to ¾″ hot rivets
†5A	5	1 1/16	12¾	2½	18	½		Drives up to ¾″ hot rivets
*6A	6	1 1/16	17	2½	18¾	½		Drives up to ⅞″ hot rivets
*8A	8	1 1/16	19	3	21	½		Drives up to 1⅛″ hot rivets
*9A	9	1 1/16	21	4	25	½		Drives up to 1¼″ hot rivets

*With open Type Outside Trigger Handle. †With Inverted Type Handle.

Table 10 JAM RIVETER

0	4	1¾	11⅞	2½	31	½	1.2165″ diam. by 2¾″ long	For rivets up to 1⅛″ diameter
7	5⅜	1 1/16	13 15/16	3	30	½		Drive rivets to ¾″ diameter Buck any size

Table 11 RIVET BUSTER

999	9	1 1/16	22½	4	*25¾	½	1.3415″ diam. by 2¾″ long	Cutting off Rivets up to ¾″ diameter.

*Weight with Retainer and Chisel 28¼ lbs.

Table 12 SCALING AND CHIPPING HAMMERS

Size No.	Piston Stroke Inches	Length over-all Inches	Weight Lbs.	Size Hose Recommended Inches	Work adapted for
N0	1¼	10½	6¾	½	Very light scaling, calking.
N1	1¼	10½	7½	½	Light scaling, calking, chipping
1R	1	11	12	½	Light chipping, calking, flue beading
2R	2	12	12½	½	Medium chipping, calking, flue beading
3R	3	13	13½	½	General chipping work
4R	4	14	14½	½	Heavy chipping work
5R	4	14	14	½	Extra heavy chipping.
B	2	13¾	13¾	½	Cleaning and chipping steel castings and chipping billets.
C	2 7/16	15	14½	½	
E	3½	16½	16¼	½	
000	¾	10½	10¼	½	Light aluminum castings, light cast iron
100	1	11¼	11	½	Heavy aluminum castings, medium cast iron
200	2	12⅜	11¾	½	Heavy cast iron, medium steel castings, high carbon billets
300	3	13⅞	13½	½	Heavy steel castings, low carbon and alloy steel billets
400	4	15⅜	14¼	½	Extra-heavy chipping.

Table 13 PNEUMATIC DIGGERS, COAL PICKS, COREBREAKERS, MINE SAMPLING TOOL

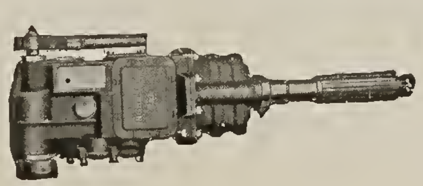
73	2½	19¼	18½	½	73—all kinds of ground in caisson sinking and tunnels, corebreaking, demolition.
97	2	17¼	18½	½	97—for tunnel work in medium hard ground and clay.
57	5¼	22¾	23½	½	57—heavier work than size 73.
57 (Digger)	5¼	37½ (incl. blade)	31 (incl. blade)	½	
157 (Digger)	5¼	43½ (incl. blade)	35½ (incl. blade)	½	157—trench digging, shaft sinking in hard clay.
58 (Digger)	4½	35 (incl. blade)	40½ (incl. blade)	½	58—stiff gravel, hard pan, frozen ground.
158 (Digger)	4½	40½ (incl. blade)	47 (incl. blade)	½	158—trench digging, shaft sinking in very stiff or frozen ground.
257	5¼	20¾	24½	½	Mine Sampling and Hitch Cutting.

Table 14 SCALING TOOLS

Size No.	Cyl. Bore Inches	Piston Stroke Inches	Diam. Working Face, Ins.	Operating Length Overall, In.	Weight Lbs.	Hose recommended Inches	Scaling Work suitable for
16 Short	1 3/16	¾	⅞	4⅛	2½	½	Flat surfaces and rivet heads up to 1″
16 Long	1 3/16	¾	⅝	5⅜	2¾	½	For rivets larger than 1″.

Table 15 SAFETY-FIRST SAWS

Size	Average Free Speed R. P. M.	Weight Lbs.	Max. Depth Cut Inches	Size of Saw Blade	Length Overall Inches	Distance from Center of Saw to Front End of Guard, Inches	Hose Inches
B6	1500	15	1½	6″ Dia. with ⅞″ hole	19½	6¾	½
B8	1050	20½	2½	8″ Dia. with ⅞″ hole	23	7½	½
B12	700	38½	4⅛	12″ Dia. with 1″ hole	29½	11½	½



No. 80 Close Quarter Drill

Size 7 Grinder

Size 73 Digger

Size 157 Digger

No. 33 Backfill Tamper

"Utility" Hoists

Utility" Hoists, being portable, are suitable for a wide variety of work. In trench work the hoists are useful for scraping, loading, and backfilling, for handling pipe lengths, etc. In building construction and repairs they can be used for miscellaneous hoisting and the moving of building materials, forms, etc. They can easily be mounted on a Portable Air Compressor. "Utility" Hoists are extensively used in mine service on a wide variety of work where hoists of their capacities are needed.

"Utility" Hoists use a radial piston type of motor that has proved very rugged and reliable as well as being economical in air consumption.

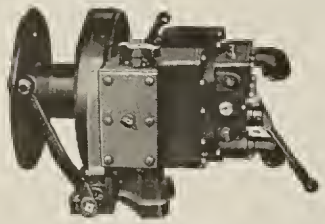
"Utility" Hoists are made in 6 sizes. The largest size is capable of exerting a rope pull up to 2,000 pounds with a single cable. The capacity can be increased many times with the use of a block and tackle.

Size	* Rated Capacity Lbs.	Maximum Amount of Cable, Ft.		Rope Speed Ft. per Min. 80 lbs. Pressure	Width Ins.	Lgth. Ins.	Hgt. Ins.	Net Wgt. Lbs.
		5/16" dia.	3/8" dia.					
CU	750	350	225	75	15	25⅜	19⅛	275
DU	1000	350	225	61	15	25⅜	19⅛	275
D6U	1250	350	225	60	15	25⅜	19⅛	275
D6UL	1250	900	600	60	15	34¾	22⅛	405
EU	2000	...	225	50	15	26¼	19⅛	310
EUL	2000	...	600	50	15	35½	22⅛	440

*Capacity can be increased many times by the use of sheave or block and tackle.

"Little Tugger" Hoists

"Little Tugger" Hoists are furnished with single- or double-drum arrangement, and for operation on compressed air. They are built in sizes delivering 3½ to 14 horsepower at 60 to 80 pounds gauge air pressure. They are extensively used on all kinds of contracting, quarrying, and mining work.


"Little Tugger"
Single-Drum Hoist

The hoists can be mounted anywhere. Clamps are supplied for mounting to vertical column, column-arm, etc. Extra holes are provided in the base plate for bolting to a timber, floor or swivel plate.

"Little Tugger" Hoists are used for "slushing," scraping, hauling, and loading. Clamped to a drill column or stretcher bar, shaft bar, or timber, they are used in winzes, stopes, and raises for lowering and raising drilling machines, mountings, fittings, drill steel, timbers, and miscellaneous material; for hauling cars in dirts and tunnels, for placing light machinery and for hoisting and lowering ore and water buckets in shallow shafts, etc.

"Safety First" Air Saws

The "Safety First" Air Saw is portable and is easily handled by one man. It can be operated in almost any position, and cuts ten times as fast as the hand saw. An automatic safety guard protects the operator at all times.

This saw can be used for trimming off sheet piling, cutting concrete forms, and planking, cutting and ripping boards on building work, trimming, roofing, etc.

The blades are easy to remove and replace. Cross-cut, rip, or combination cross-cut and rip blades can be supplied. Special blades are obtainable for cutting materials other than wood, such as hard rubber, fibre, bakelite, stone, metals, tile, cable, and other materials. See chart on page 9.

Surfacing Machine

The 6G Surfacing Machine is an air-operated tool that saves time and labor in finishing concrete and polishing surface and edges on stone. As all working parts are completely enclosed, it is not affected by dirt and moisture. It is light in weight and easily handled.

In operation, the grinding wheel is held flush on the surface. A flexible joint between the grinding wheel and the motor allows the tools to be swung slightly from an exact right angle without tipping the wheel and causing the edge to cut in.

The wheels are sulphured into the head and are renewable. By securing two or three extra heads with wheels of a finer grit, or equipped with scrolls, tin or buffing wheels, it is possible on monumental stone work to change from one wheel to another in less than a minute. See chart on page 8.

I-R Air and Steam Hose

A complete line of air hose is available in all the standard sizes. A choice is available in each of these sizes, allowing a selection of the proper brand of hose to most efficiently meet customers' requirements.

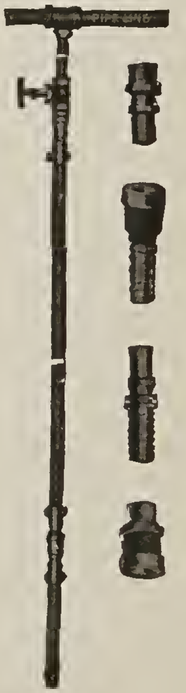
Most of the brands can be furnished with wire winding if desired.

A complete line of steam hose is also available.

AIR HOSE

Brand	Construction	Size and safe work. Presure	
(1) General rock drill service except in abrasive rock.			
Antipeel	Plain or half-round wire wound—7 or 9 ply	½"—7 ply—125 lbs. ¾"—7 ply—100 lbs. 1"—9 ply—100 lbs.	
(2) For unusual severe service.			
Ruffian	Braided 2 or 3 braids	2 Braid	3 Braid
		1" 175 lbs. ¾" 150 lbs. 1" 100 lbs.	350 lbs. 200 lbs. 150 lbs.
Air Drill	Canvas Cover with half-round wire, 4 ot 5 ply	¾"—4 ply—100 lbs. 1"—5 ply—100 lbs.	
(3) For service under non-abrasive conditions.			
Hammer	Braided 2 or 3 braids	2 Braid	3 Braid
		½" 150 lbs. ¾" 125 lbs. 1" 100 lbs.	200 lbs. 150 lbs. 125 lbs.
Special linen fabric	Plain or half-round wire wound—7 or 9 ply	½"—7 ply—100 lbs. ¾"—7 ply—100 lbs. 1"—9 ply—100 lbs.	
Coal Cutter	Half-round wire wound	1"—9 ply—80 to 100 lbs.	

Type "A" Hose Couplings



An improved hose coupling is offered for use in connection with pneumatic tool and tie tamper service. It is a simple and sturdy coupling, able to stand much wear and abuse without losing its serviceability. It is quick acting and will not jam, stick, or become leaky, even under severe working conditions. It consists of two parts, known as male and female. These may be connected or disconnected by making a quarter-turn as the two halves are pushed together.

These hose couplings are available in the following sizes:

Style F. O.—Female coupling end with an outside thread pipe connection. Sizes, ½" and ¾"; standard pipe thread.

Style M. H.—Male coupling end with spiral ribbed shank to insert into hose. Sizes to fit ½", ¾", and 1" hose.

Style F. H.—Female coupling end with spiral ribbed shank to insert into hose. Sizes to fit ½", ¾", and 1" hose.

Style M. O.—Male coupling end with an outside pipe connection. Sizes ½", ¾", and 1"; standard pipe thread.

Sizes ½" and ¾" are interchangeable; that is, a ½" male end can be used with a ¾" female end or vice versa. Gaskets for these three sizes are also interchangeable.

Y couplings in ½" or ¾" size are also available.

Hose ends are provided with groove for Hose clamps. When ordering, specify letters and size. *Sample*—½" F. O.

Hose Clamps

Hose Clamps

To meet the severe conditions encountered in rock drill service an improved line of couplings is available in ½", ¾", and 1" sizes.

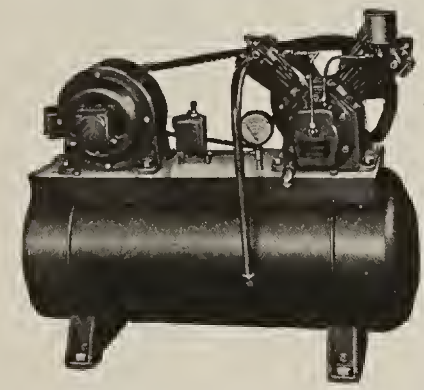
The ½" and ¾" sizes are known as "Hammer Drill" and the 1" size is known as the "Leyner" Couplings.

Type 30 Tank-Mounted Compressors

The Type 30 is a two-stage, air-cooled, ball-bearing, compact, self-contained air compressor unit of greater dependability than those which have heretofore been available.

Where a small amount of compressed air is needed we offer the Type 30 air-cooled or the Type 15 air or water-cooled compressor. These small size machines are manufactured in accordance with the Ingersoll-Rand standard, and they are given the same careful attention, running test, etc., as afforded the larger Ingersoll-Rand Compressors.

The efficient air cooling method with circulating air driven directly on the cooling coils, the adjustable V belt drive, the lubricating system on which there is nothing to wear or get out of order, the ball bearing mounted shaft, and the valves which will give satisfactory service over an indefinite period, are all noteworthy features.



No special foundation is necessary, the installation being complete when the electrical connections to the motor have been made.

These machines are fully automatic under all conditions. Even should the compressor shut down because of line voltage failure, it will stop in an unloaded condition thus protecting the motor from burning out should the voltage come on again without warning.

The Type 30 Line

Compressor Size, Inches			Horsepower	*Piston Displacement Cu. Ft. per Minute	Revolutions per Minute of Compressor	Size of Air Receiver
Bore of Low-Pressure Cylinder	Bore of High-Pressure Cylinder	Stroke				
3	1¾	2	¾	3.25	400	16 x 40
3	1¾	2	1½	6.5	800	16 x 40
4	2½	2¾	3	12.0	600	16 x 40
5	3	3½	5	19.9	500	18 x 48

*Repeated tests prove that at from 160 to 200 pounds per square inch pressure a Type 30 Compressor will actually deliver from 30 to 50 per cent (depending on size) more air than ordinary single-stage compressors of even greater piston displacement.

Type 15 Compressors

These compressors are of the vertical, single-stage, single-acting type. Lubrication for all parts is entirely automatic, it being of the improved "constant-level" positive-flow type. This system maintains a "constant-level" of oil in the crankcase at all times and prevents any oil from being discharged with the air. Inlet and discharge valves, which are of the mushroom type, are located in the cylinder head, directly over the cylinder bore, in such a manner as to insure a full and unobstructed passage of the air.

The various sizes and the different types of drive make it possible to install exactly the right machine. The reliability, accessibility, and automatic features of these small compressors insure freedom from trouble and uninterrupted service.

Type 15 Vertical Air Compressors

Cylinder Inches		Speed Revolutions Per Minute	Rating				Belt Wheel Inches	
			Piston Displ. cu. ft. per Minute	B.H.P. required at Belt Wheel				
Diam.	Stroke			60 lbs. Air Pressure	100 lbs. Air Pressure	150 lbs. Air Pressure	Diam.	Face
3	3	600	7.3	1.38	1.5	2	12	2¾
3½	4	550	12.2	2.2	2.6	3	16	3¾
4½	5	500	23	4.3	4.85	5	20	4⅞
6	6	450	44	5.8	6.6	7.5	24	5½

I-R Air Receivers

I-R Vertical Air Receiver

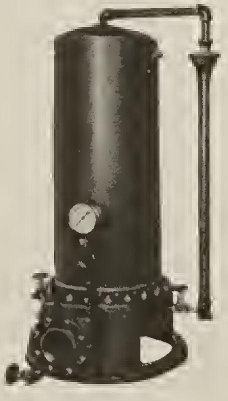
The subject of air receivers is one which, for many years, has geen given particular study by our engineers. As a result, the receivers manufactured by us are now recognized as standard in all parts of the world. The I-R line is the most complete offered to the trade today, embracing a very wide range of sizes and capacities. For this reason, it is possible to select the correct unit for any job, no matter how large or how small.

The standard air receivers sold by Ingersoll-Rand are built according to the A. S. M. E. Code for "Unfired Pressure Vessels," and are designed for a working pressure of 125 pounds per square inch gauge. Receivers for special codes and for higher pressures can be supplied on request.

Air Aftercoolers

Moisture in compressed air or gas is costly and annoying. Carried into the lines in the form of vapor, it condenses when cooled and has many harmful effects. In compressed air, it washes away lubricant from the tools and machines through which it passes. It freezes in valves, ports, and other openings because of the sudden expansion of the air. It hastens corrosion of all metal it reaches, and hastens the decay of rubber hose. In the case of compressed gas for distribution, it is one of the leading causes of line and meter troubles.

Removal of moisture before the air or gas is introduced into the lines is the best method of procedure. This can be done effectually with Ingersoll-Rand Aftercoolers, which are units of the most modern design. They can be furnished in suitable sizes for any compressor, and can be arranged for the most convenient piping scheme. They occupy only a small amount of space and require practically no attention after installation.



Class "VC" Aftercooler

Ingersoll-Rand Drifters

Ingersoll-Rand Drifters are economical to operate and easy to handle. They are used largely for horizontal drilling, and have been adopted as the standard drills in the world's largest mines and tunnels, for all kinds of work.

The six sizes of I-R drifter drills covered in this article range in weight from 117 lbs. to 222 lbs. They are suitable for a wide range of drilling conditions.

The L-74 is a real one-man machine. It weighs but 117 lbs., yet it is powerful and a fast driller. It is particularly suited for soft or medium-hard rock, and is designed for close-quarter work in small headings, or stopes, or where light weight is essential. As a quarry machine in soft rocks, such as marble and limestone, it makes an ideal drill for foot-holing.

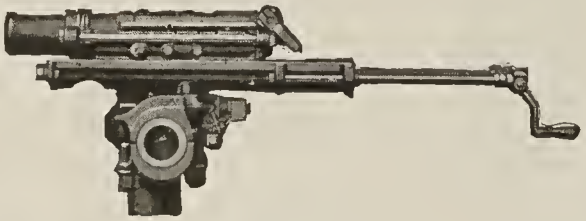
The N-75 weighs but 144 pounds and is recommended for drifting in the average-sized tunnel or drift heading. Its powerful action makes it adaptable to seamy or fitchery ground.

The S-70 machine is the largest of the regular drifter drills. It weighs 185 pounds and is designed and recommended for heavy duty, particularly in hard rock. It will be found especially economical in large-bore tunnel work and large mine headings.

The N-72 is intermediate between the L-74 and N-75 and fits that field for a powerful light weight drifter.

The X-71 is the heaviest and most powerful machine manufactured by Ingersoll-Rand. It is designed especially for deep holes, for exceptionally hard rock, and for all conditions where powerful rotation and strong blowing are needed, such as quarry work.

For certain classes of work, especially where air pressure of 100 pounds is maintained, the R-72 will prove the most economical and durable. It has met with unusual success in tunnel work, both drifting and ring-drilling.



N-75 Drifter Drill

Ingersoll-Rand Drill Steel

As new drills are being used for more power, it is advisable to use drill steel as large as the "standard section" for the drill used.

Even then, the drill steel is subjected to more severe service than with old style, worn out drills. Consequently, the quality of the drill steel is becoming more and more of a factor.

Ingersoll-Rand Drill Mounting.

The cardinal features of a good drill steel are:

(1) It must be free from impurities.

(2) It must be uniform in size. The hole must be centrally located, of uniform size throughout the bar, and of sufficient diameter to accommodate the water tube.

(3) It must be uniform and proper carbon content to insure the best results from tempering.

"IRSOT" Steel

"IRSOT," the drill steel made especially for Ingersoll-Rand Company, combines all of these requisites and gives the greatest service at the lowest cost.

"IRSOT" steel can be furnished in small or carload lots. It can also be furnished sharpened and shanked in standard lengths, ready for work.

Wagon Drill Mounting

A special wagon mounting is available which is particularly suitable for drilling deep down holes in soft to medium hard rock where it is possible to get long runs with each bit. This mounting readily accommodates a 10′ change in drill steel.

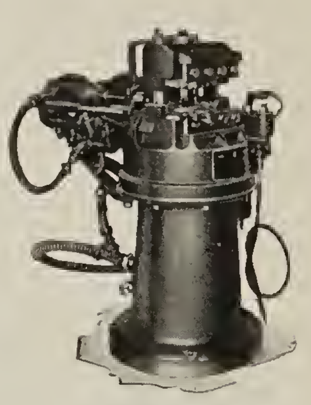
Ingersoll-Rand Rock Drill Steel Sharpeners

The efficiency of the entire rock drilling plant depends upon the condition of the drill bit. Machine-made bits are not only better—sharper and more correctly formed—but they are cheaper to make. Their cutting edges are sharp, and all are exact duplicates. Accurate gauging permits 1/16″ variation in the gauge of successive steels, so that starter bits of smaller diameter can be used to bottom a hole at desired size. Correctly formed reamed edges eliminate rifled holes and sticking steels.

Ingersoll-Rand Drill Steel Sharpeners are powerful, fast acting, durable, and simple to operate. They are available in three sizes:

The IR-34 is intended for bits up to 2½″ gauge on steel sections not exceeding 1⅛″. The IR-4 is available for bits up to 2½″ diameter on any section of steel up to 1¼″. The IR-50 Sharpener handles bits up to 3⅝″ diameter on steel sections up to and including 2″ round or cruciform of 1⅞″ other section. Accessories are available for all these sharpeners to make various standard and special bolt and rivet heads, chisel bits and shanks, coal picks, moil points, etc., within the stated capacity of the machines.

Also see "Shank and Bit Punches" and "Pedestal Grinders."



No. 34 Sharpener with New No. 34 SP Bit Punch

I-R Sharpeners	No. 50	No. 4	No. 34
Weight, machine bare.....	2935	1750	1430
Floor space occupied.			
Length..............	48″	44¼″	41¼″
Width..............	38⅜″	35″	33¼″
Height..............	54″	51¼″	49¾″
Maximum size stock handled	2″ round or cruciform, 1⅞″ heavier section	1⅛″ round or cruciform, 1″ heavier section	1⅛″ round or cruciform, 1″ heavier section
Maximum gauge of bit.....	3⅝″	2½″	2½″
Air pressure recommended..	70-100	70-100	70-100
Hose or piping recommended....................	1¼″	1″	1″
Force exerted on down stroke (100 lbs. air pressure)............	28,850	24,086	21,820

Shank and Bit Punches

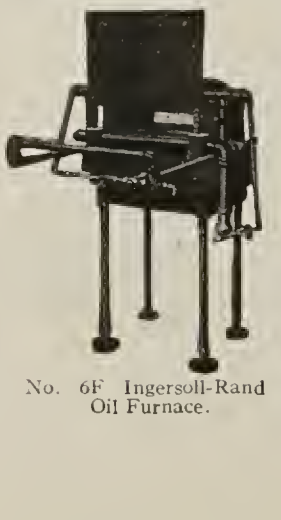
Machine punches make it an easy matter to properly open the holes in bits and shanks. The 34SP Shank and Bit Punch is designed for mounting directly on the IR-34 Sharpener. The IRLP Shank and Bit Punch is sold for attachment directly to the IR-4 and IR-50 Sharpeners and is also available on a separate pedestal mounting.

Pedestal Grinders

The Pedestal Grinder consists of a grinding wheel directly connected to small air motor mounted on pedestal and controlled by foot throttle. It is a valuable addition to the blacksmith shop in squaring the ends of worn shanks and miscellaneous other grinding jobs. Two types are available; the No. 8 Pedestal Grinder and the No. 9 Bench Grinder.

Ingersoll-Rand Oil Furnaces

Ingersoll-Rand Furnaces give a clean, uniform heat which is at all times under the control of the operator and which is suitable for welding and tempering without special preparation. While generally sold for use with fuel oil, they may be fitted to use artificial or natural gas.



No. 6F Ingersoll-Rand Oil Furnace.

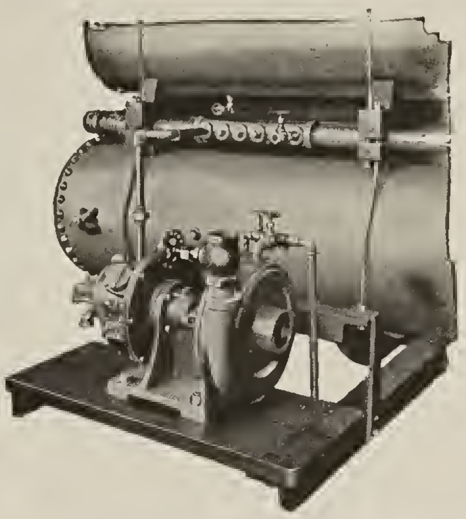
The steel cannot be injured by the absorption of such injurious elements as the sulphur, phosphorus, etc., which are found in nearly all coals. Neither can it be injured from unequal heating, as the steel is heated in flame only, and is at all times in full view of the operator.

The No. 6F Furnace will heat a sufficient quantity of steel for a No. 34 I-R Sharpener, while the No. 26 Furnace will handle enough for a No. 50 Ingersoll-Rand Sharpener.

The No. 26 Furnace can readily be fitted with control equipment which better enables the operator to keep the furnace at any desired temperature, thus insuring better drill steel performance.

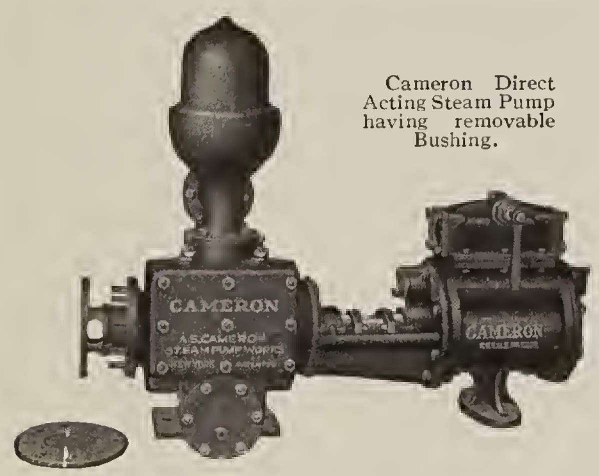
PORTABLE PUMP UNIT

This Cameron Pump is designed for operation in connection with the I-R Portable Air-Compressor. It is mounted on the frame of the compressor and is positive in operation, starting up just as soon as the air is turned on. The reciprocating pump requires no priming, while the centrifugal type is equipped with an automatic self primer. These pumps can be regulated to any desired capacity within its maximum rating. There are three sizes of Cameron pumps suitable for mounting on I-R portable compressors. Two of these are of the direct-acting type; the other is a centrifugal air-motor-driven type, as illustrated.



Cameron Centrifugal Pump mounted on Type 20 Portable Compressor.

CAMERON DIRECT-ACTING AND CENTRIFUGAL PUMPS



Cameron Direct Acting Steam Pump having removable Bushing.

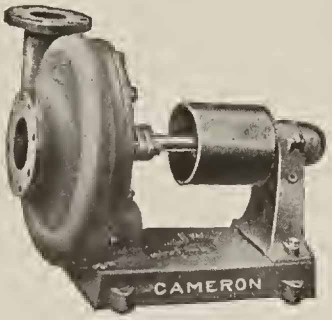
Cameron Pumps are built as direct-acting and centrifugal types in sizes suitable for every fluid-handling problem. Cameron Direct-Acting Pumps include both the piston and plunger types and also the vertical plunger sinking pump, any of which may be operated by steam or compressed air. The centrifugal line is furnished in single- or double-suction types with up to 6 stages in a single casing. They are driven by being direct-connected through flexible coupling to electric motor; steam turbines; oil, gasoline or gas engine; or for belt, rope, or water turbine drive.

Cameron Direct-Acting Pumps have fewer parts than any other steam pump made. Only four parts go to make up the entire steam mechanism. This type has no dead center and will always start at any point of the stroke and can be completely taken apart without disconnecting any of the piping. Water piston, water cylinder, bushings, and long body piece are furnished of bronze or iron. This pump is also furnished with removable bushing. They range in size from 6″ to 20″ stroke and in capacities from 12 to 610 G. P. M. These pumps are for general service work not requiring too high a suction lift.

Cameron Vertical Plunger Sinking Pump.

The Cameron Contractor's Differential Plunger Sinking Pump is particularly suitable for situations where the lift is light and where the water contains a good deal of sediment.

Lightness is one feature of this pump. It is attained by discarding the valve chest and placing the valves in the lower cylinder and plunger.

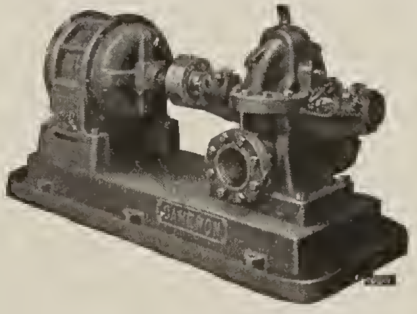


Cameron Single-Suction Centrifugal Pump

The flow of the water is in one direction—a feature which reduces the frictional resistance and prevents the accumulations of sediment over the valves.

Cameron Single-Suction, Open Impeller Centrifugal Pumps, while not high priced, are carefully designed in every respect. They are offered in sizes up to 6″ for various capacities, and for heads up to 70′. The belt-driven pumps, of all sizes, are carried in stock so that quick deliveries can be made.

Cameron Double-Suction Impeller Pumps are suitable for low or moderate heads. Built in single units for heads up to 300 ft. or arranged in series, these pumps are satisfactory for heads as high as 600 ft. They have capacities ranging from 50 to 100,000 G. P. M.



Cameron Double-Suction, Motor-Driven Centrifugal Pump.

Cameron Multi-Stage Pumps are built with from 2 to 6 stages in a single casing, and 12 stages in series. Their capacities range from 125 to 3,000 G. P. M. against pressures ranging up to 1,600 lbs. and over.

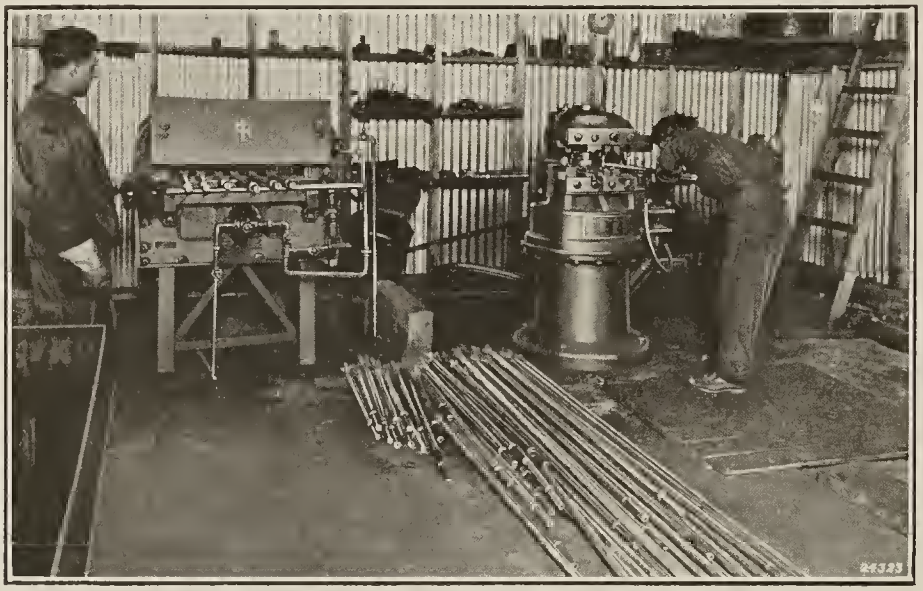
Ingersoll-Rand Products for the Contractor

- Aftercooler, Air
- Bars, Quarry
- Calking Hammers
- Chipping Hammers
- Compressors, Air
- Compressors, Air Portable
- Diggers, Clay and Trench
- Drills, Columns and Mountings
- Drills, Air Hammer
- Drills, Concrete
- Drills, Pneumatic (Wood boring and metal)
- Drills, Prospecting (Core)
- Drills, Railway Track
- Drills, "Jackhamer," Rock (Air and Steam)
- Drills, Stone
- Engines, Gas, Oil
- Forges, Oil and Coke (for heating drill Steel)
- Grinders, Pneumatic Portable
- Hammers, Riveting
- Hoists, Air and Steam, Portable
- Hoists, Air Motor
- Hoists, Scraper—Loader
- Hoists, Single and Double Drum
- Holders-On, Riveting
- Hose—Air, Steam, Water
- Hose Clamps
- Hose Couplings
- Manifolds, Rock Drill
- Motors, Air
- Oilers, Rock Drill
- Paving Breakers
- Pile Drivers (Sheet)
- Pumps, Air
- Pumps, Air-Lift
- Pumps, Boiler-feed
- Pumps, Centrifugal
- Pumps, Drainage
- Pumps, Road Builders
- Pumps, Sewerage and Foundation
- Pumps, Steam
- Punches, Shank and Bit (for drill steel)
- Rammers, Sand
- Receivers, Air
- Reheaters, Air
- Riveters, Jam
- Rivet Busters
- Riveting Hammers
- Saws, "Safety First" Air
- Scaling Hammers
- Sharpeners, Rock Drill Steel
- Shanking Device, Hand
- Steel, Rock Drill
- Surfacer, Road, Concrete
- Tampers, Backfill
- Tools, Hand Blacksmith
- Tools, Pneumatic
- Wire Brushes, Pneumatic

DRILL STEEL FOR JACKHAMERS AND PAVING BREAKERS.

The success and speed of rock drilling and paving breaking depends to a large extent upon the steel used. Every different kind of rock requires a little different steel and to temper and sharpen a steel which will work well takes expert men and modern equipment.

We have installed a complete drill sharpening plant with every modern machine for correctly fashioning and tempering shanks and bits for jackhammers or paving breakers. In charge of this department we have an expert sharpener who knows drill steel and the way to temper each steel to do its particular job. When you are doing a difficult job if you will send samples of your rock and write regarding your job we will be glad to sharpen your steel to best accomplish your work.



A MODERN DRILL STEEL SHARPENING SHOP

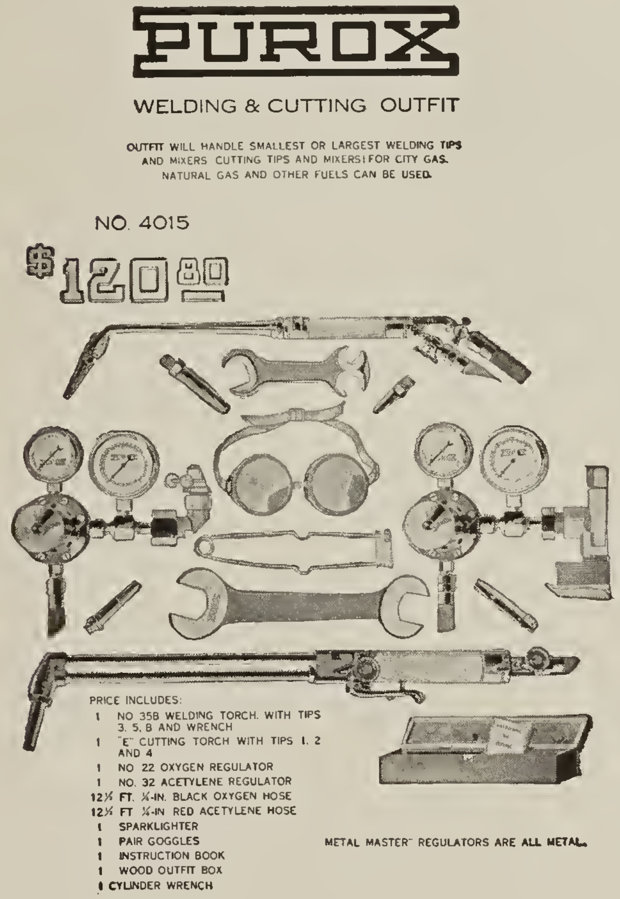
Our stock of drill steel includes steels of any length. We make up these steels special to meet your requirements. We also carry drill steels in all lengths already bitted and moil points for paving breakers for immediate shipment.

Prices on drill steel sharpening are set to save you money and you will find it economical to send us your bits for resharpening. You will receive prompt service and will have a bit which will stand up much longer than a hand made bit. In sending your bits be sure that they are sent prepaid freight and are addressed to The Victor L. Phillips Co., 16th and Baltimore, Streets, Kansas City, Missouri.

Remember a machine sharpened bit is uniform. There is no chance of rifling. Bits made on a machine are absolutely true and each point is identical to the next. This makes the bit wear evenly and last much longer.

Write for any additional information regarding drill steel sharpening. See our discount book for prices on steel and sharpening.

ACETYLENE WELDING AND CUTTING OUTFITS AND SUPPLIES.



PUROX

WELDING & CUTTING OUTFIT

OUTFIT WILL HANDLE SMALLEST OR LARGEST WELDING TIPS AND MIXERS CUTTING TIPS AND MIXERS FOR CITY GAS. NATURAL GAS AND OTHER FUELS CAN BE USED.

NO. 4015

$120.80

PRICE INCLUDES:
1 NO 35B WELDING TORCH. WITH TIPS 3, 5, 8 AND WRENCH
1 "E" CUTTING TORCH WITH TIPS 1, 2 AND 4
1 NO 22 OXYGEN REGULATOR
1 NO. 32 ACETYLENE REGULATOR
12½ FT. ¼-IN. BLACK OXYGEN HOSE
12½ FT ¼-IN RED ACETYLENE HOSE
1 SPARKLIGHTER
1 PAIR GOGGLES
1 INSTRUCTION BOOK
1 WOOD OUTFIT BOX
1 CYLINDER WRENCH

METAL MASTER" REGULATORS ARE ALL METAL.

Purox "Metal Master" welding and cutting torches need no introduction. Thousands of torches in the hands of satisfied users speak the most eloquent testimonial. Purox was the first to foster the balance of pressure principle—now acknowledged and used by every equipment manufacturer in the United States.

Flame character of Purix welding torches accounts in great measure for their popularity. The persistent, neutral, soft flame is a Purox feature. The ability to make rapid, clean cuts with unusually low pressures is distinctly a Purox development. Greatly increased economy from these low pressures is an inevitable result.

No castings are used in Purox torches. Bronze is employed wherever desirable. Repeated testing during and after assembly permits Purox to issue a torch insurance policy with every torch.

We have a complete line of welding and cutting outfits and supplies and electrodes. When you are in the market for equipment of this kind please write for our recommendations. The following is the price on welding wire which is most commonly used:

PUROX IRON

Copper Coated

Extra best quality iron for general purpose welding, including pipe lines, steel plate, sheets, and steel castings. Exceptionally clean and uniform.

		Per lb. in quantities of		
Diam.	Length	1-49	50-199	200-500
1/16″	36″	$0.17	$0.16	$0.15
3/32″	36″	.15	.14	.13
1/8″	36″	.14	.13	.12
5/32″	36″	.13	.12	.11
3/16″	36″	.13	.12	.11
1/4″	36″	.13	.12	.11

PUROX MILD STEEL

Copper Coated

A Mild Steel Wire that may be used very successfully where the requirements are not so exacting. Recommended for welding heavy steel or building up Steel Castings.

		Per lb. in quantities of		
Diam.	Length	1-49	50-199	200-500
1/16″	36″	$0.14	$0.13	$0.12
3/32″	36″	.13	.12	.11
1/8″	36″	.12	.11	.10
5/32″	36″	.11	.10	.09
3/16″	36″	.11	.10	.09
1/4″	36″	.11	.10	.09

PUROX CAST IRON

For Cast Iron Welding

		Per lb. in quantities of		
Diam.	Length	1-49	50-200	250-500
1/8″	24″	$0.23	$0.22	$0.21
3/16″	24″	.15	.14	.13
1/4″	24″	.12	.11	.10
3/8″	24″	.11	.10	.09
1/2″	24″	.11	.10	.09

PUROX BRONZE

For Cast Iron, Brass, Bronze, and Malleable Iron

		Per lb. in quantities of		
Diam.	Length	1-49	50-99	100 up
1/16″	36″	$0.55	$0.54	$0.53
1/8″	36″	.42	.41	.40
3/16″	36″	.40	.39	.38
1/4″	36″	.38	.37	.36

"THE STRONGEST GEARED POWER FOR ITS WEIGHT IN THE WORLD"

B. B. Bros
ALL STEEL HAND HOIST
SEATTLE, U.S.A.
TRADE MARK REGISTERED

WEIGHT
110 Lbs.

CAPACITY
FIVE TONS STRAIGHT LINE

ALL STEEL 5 TON BEEBE BROS. SEATTLE U.S.A.
PAT. PENDING

PAT. U. S. AND CANADA
OTHER PATS. PENDING

TWO SPEEDS
4-1 and 24-1

POSITIVE INTERNAL BRAKE

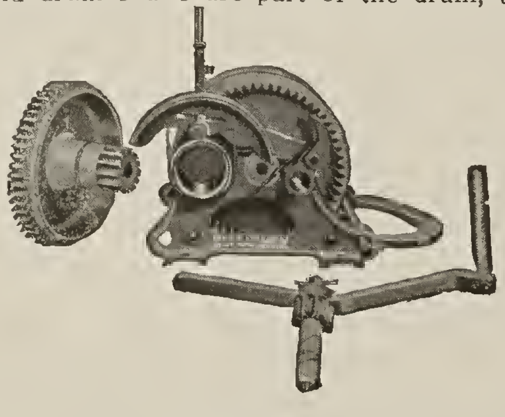
DIMENSIONS
16″ x 17″ x 13″ High

A GENERAL UTILITY HOIST

Compact, Powerful, Safe—Built of eight pieces of high grade electric steel, annealed, machined and assembled into a compact, powerful, safe, 2-speed hand hoist, with heavy duty anti-friction babbitt bearings and a positive internal brake. A modern tool weighing but 110 lbs.; can be bolted anywhere and operated in any position. Capacity, 5 tons straight line.

For Any Hand Hoisting, Lowering or Pulling—For contractors, hand derricks, gin poles, jib and hand traveling cranes, trucks, wrecking, loading, moving and installation of heavy machinery, boilers, etc., tank erection, pipe line, bridge and timber work, marine ways and shipbuilding, land clearing, general utility in industrial and power plants, machine shops, mines, mills, docks, and where hand power is needed for an emergency or intermittent heavy lift or pull where power is not practical or available.

Light and Portable—The B. B. Bros. Hoist has a larger range than a 5-ton chain block in speed, power or safe operation, and in portable or field service when bolted to a stand with anchor line attached to tail hold yoke (hoist and not stand taking the pull), it is the most practical, portable, hand power unit on the market today, with quicker set ups and larger range of speeds than any other available equipment.



Rugged Construction Throughout—The only hoist without keys, set screws or pins to strip. Internal gear and drum shafts are part of the drum, the extended drum shafts being machined to 2-in. diameter and running in babbitted bearings in the steel side frames. External gear, machined internal brake drum, drive shaft and internal pinion are also one piece of steel. The 3-3/16 in. machined drive shaft is carried by a wide babbitted bearing in the main steel side frame.

Positive Lockable Brake—The B. B. Bros. Hoist has a positive internal cam action brake obtainable in no other hoist. Lined with high grade wire-inserted brake lining, engaging the internal rim of outside gear, giving a braking ratio of 4:1. The cam lever action makes it possible to easily exert any desired pressure. Brake will hold or lower a 5-ton load or permanently lock same when set at any point until released. Crank and pinion are instantly removable for rapid lowering with brake, or running out cable.

Spring Operated Dog—Positive, equipped with locking hold out lug.

Speed—Crank pinion and shaft are one piece of steel, attached to a steel handle, instantly adjustable from 12 to 18-in. leverage. Pinion and shaft fit into a countersunk recess in center of external gear for a gear ratio of 4:1 for rapid lifts up to 1500 lbs.

Power—When crank pinion shaft is placed into lower steel bearing, a compound gear ratio of 24:1 is obtained for loads up to 5 tons.

Large Drum Capacity—The cable drum is 5-in. diameter, 8 in. wide with flanges 3½ in. deep, giving a drum capacity when evenly spooled of 160 ft. of ⅝ in., 250 ft. of ½ in., or for light, fast work 325 ft. of 7/16 in., or 445 ft. of ⅜ in. flexible plow steel cable.

All Steel Truck Attachment Plates—For heavy truck work allow hoist to be turned and locked at an angle, swung over in front of the truck body when not in use, or instantly removed. This is a convenient but not necessary requirement as Hoist can be bolted to a permanent position on truck if desired. Weight 23 pounds. Price $10.00 extra.

Steel Tail Hold Yoke—(Shown attached in lower cut and which attaches to either end of Hoist) should be ordered for anchorage cable hold if Hoist is to be used as portable or pulling machine. Weight 10 pounds. Price $4.00 extra.

Hoist Warranted Unbreakable—Every part is interchangeable, being exact machined duplicates, and manufacturer will replace gratis F.O.B. their factory any part broken from any cause whatsoever, while hoist is in hand operated service, within one year from date of purchase.

"The Strongest Geared Power for Its Weight in the World"—Mechanical Engineering Department, University of Washington, on test of one of these hoists, reports breaking ¾ in. 6/19 plow steel cable at a load of 41,000 lbs., the hoist remaining intact. Copy of report on request.

Finish—Weatherproof red enamel.

Shipping Weight—Individually crated, 125 lbs. (Export 140 lbs.—3½ cu. ft.)

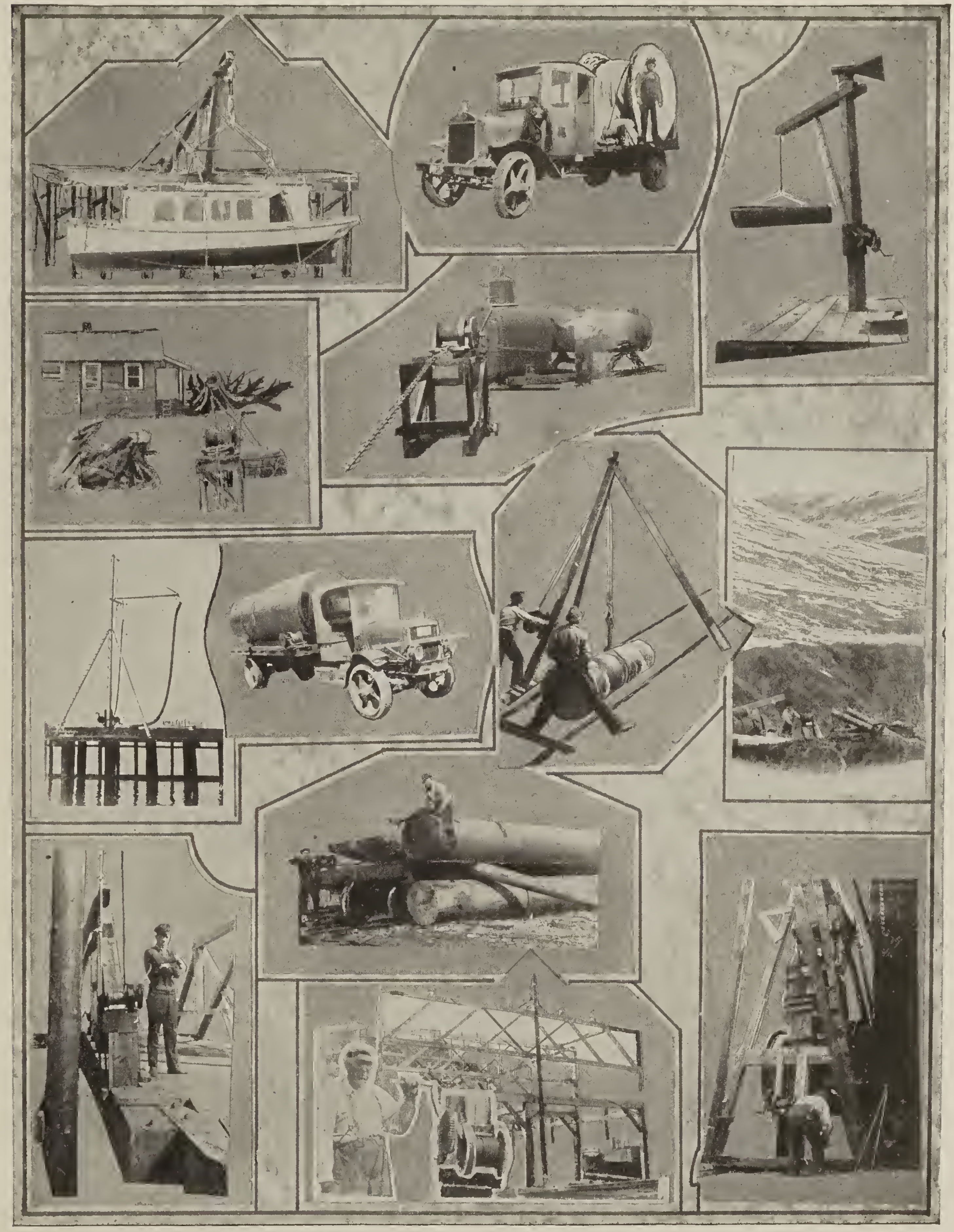
Warehouse Stocks—Chicago, Brooklyn, New Orleans, Houston. (List $80.00 each F.O.B. warehouse points.)

Price—Net List $80.00 each.

ALL STEEL HAND HOIST

SEATTLE, U.S.A.

TRADE MARK REGISTERED



The Only Modern Hand Hoist—for any hand hoisting, lowering, or pulling, and on work where power is not practical or available.

RENTAL MACHINERY DEPARTMENT

Another Feature of our complete service to the contractor is our Rental Department. We are not primarily in the rental business and one strict rule of this department is that every machine must be in first class condition and be ready to deliver the goods to the renter. Our prices are set to save money for the contractor on his job—not on the rental paid but in the freedom from breakdowns and costly delays. Every machine rented must be in absolutely first class condition and often times we place brand new machines out on rental contracts.

There are three important rules governing our rental department which must be taken care of in order to avail yourself of our rental service.

1. The rental contract must be signed before the machine will be taken out of our warehouse.

2. Drayage must be paid by the renter for taking the machine from our warehouse to the job and from the job back to our warehouse when the job is over.

3. Rentals are all payable in advance. At least one month's payment must be received before the machine can go out and in most cases the full amount for the duration of the contract should be paid.

Rental paid upon any machine may be applied upon the purchase price of the machine provided an agreement is made to that effect at the time the contract is signed.

We carry almost anything for rental service and would appreciate your inquiries. Prices will gladly be quoted on the following machines:

Pavers
Cranes
Shovels
Mixers
Compressors
Saw Rigs
Pumps
Etc.

If you are awarded a job and lack the financing to buy an outfit complete, we will gladly quote a rental price which will enable you to acquire your outfit by enlarging your equity in the machines. If you have a job which can be done quickly and which does not necessitate buying machinery you can rent new or first class machines which will not give you trouble. Write for further information.

ALL RENTAL MACHINES ARE IN FIRST CLASS CONDITION

OUR USED MACHINERY DEPARTMENT

As another department we maintain a representative supply of slightly used or demonstration machinery which is in excellent condition. We are not in junk business and every piece of used machinery which we have for sale or rent is priced to give the purchaser a greater value for his money.

It is difficult to keep a list of machinery of this kind on hand so please write us for quotations on the equipment you need. Our stock of used machinery usually consists of

Cranes
Shovels
Pavers
Compressors
Concrete Mixers
Pumps
Saw Rigs

We will be glad to show any of these items or other machines which we have in our used stock.

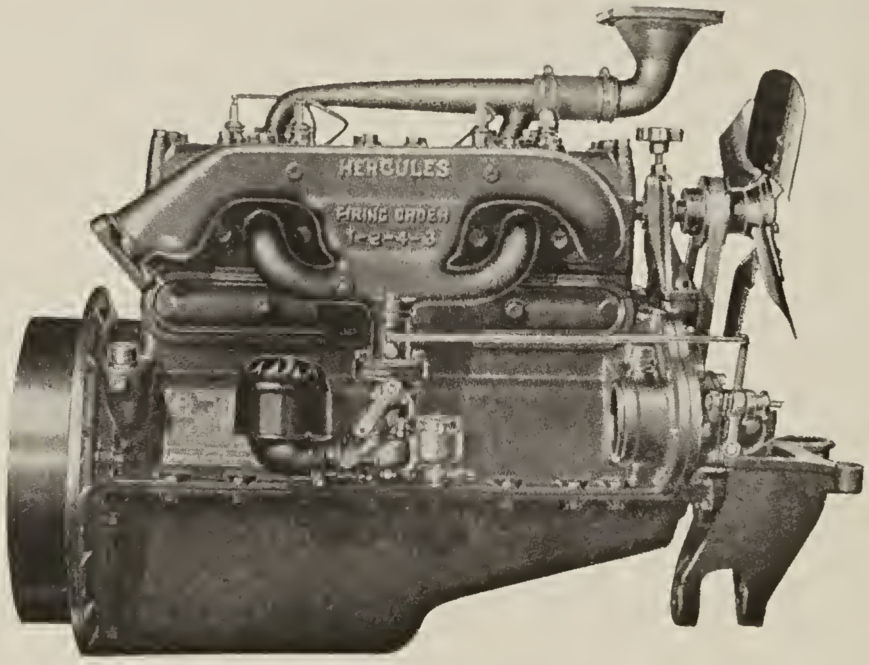
You will probably find our used machinery to be higher priced than other machinery you can find but it will be in better condition. We have built up our business in learning to understand the contractors' needs and we have always found the machine which did not require constant attention and which did not break down often was the cheapest at any price.

If you are in the market for a new outfit and would like to secure a price on the outfit, write us for specifications and a quotation.

Our business was built upon integrity and our used machinery is sold upon the same basis. You can be assured of real value in our used machinery.

REPLACEMENT ENGINE FOR FORDSON TRACTORS.

Put this Hercules Engine on your Fordson tractor and make a new machine out of it. The Hercules OX and OXC Engines are built especially for replacing the motors in Fordson tractors. All that is necessary is to take the old motor out and put the new one in. All connections and bolt holes are especially consructed to fit.



The Hercules OX and OXC engines as arranged for replacement in the Fordson tractor have a special front support bolted to the gear case cover which fits the Fordson front axle as the supporting unit. The radiator is mounted on this support and discharges through it to the water pump suction pipe. This support is also designed to provide for the standard Fordson starting crank assembly.

The bellhousing and flywheel with clutch pins receive the standard Fordson transmission and clutch, the distance from the bellhousing face to the front support is exactly the same as the specifications of the Fordson tractor.

The cylinder head has a water outlet pipe, rubber hose and a flanged connection for fitting to the Fordson radiator tank. The exhaust manifold has a rear outlet to which an exhaust pipe can be fitted, although if desired, an exhaust manifold with center outlet can be furnished.

The Hercules engines we offer for replacement in Fordson tractors include a very efficient pressure type centrifugal pump for water circulation which on account of its high efficiency assures more positive circulation and efficient cooling than the thermo-syphon system used on the original engine which it may replace. If the position of the Standard pump interferes in making the application, a shorter pump can be supplied

This engine is furnished with fan assembly, close regulating governor of Hercules design, carburetor, and a high tension magneto. Other accessories can be supplied by factory if specified.

From Kansas City, Missouri, to Kansas and Oklahoma Points

	Freight Rate
Ava, Missouri (Mansfield)	$1.02
Albany	.56½
Butler	.53½
Buffalo (Phillipsburg)	1.02
Bethany	.67
Boonville	.67
Bolivar	.74½
Cassville	1.09½
Columbia	.82
Carrollton	.50½
Clinton	.55
Carthage	.74½
Chillicothe	.53½
California	.71½
Fayette	.70
Forsyth (Branson)	.96
Greenfield	.74½
Gallatin	.53½
Gainesville (West Plains)	1.12½
Grant City	.69
Harrisonville	.43
Huntsville	.69
Hartville (Mansfield)	1.02
Jefferson City	.79
Kirksville	.78
Kingston (Hamilton)	.52
Keytesville	.61
Lamar	.70½
Linn Creek (Bagnell)	.90
Lebanon	1.03½
Lexington	.44½
Linneus	.69
Lancaster	.83½
Mexico	.79
Maysville	.55
Mount Vernon	.74½
Macon	.73
Maryville	.61
Marshall	.56½
Marshfield	.91½
Neosho	.74½
Nevada	.55
Oregon (Forest City)	.38½
Osceola	.65½
Plattsburg	.41½
Pineville (Lanagan)	.88
Princeton	.69
Rockport	.79
Richmond	.41½
Savannah	.39½
St. Joseph	.38½
Stockton (Fair Play)	.74½
Sedalia	.59½
Platte City	.41½
Trenton	.56½
Warrensburg	.50½
Waynesville (Crocker)	1.06
Atchison, Kansas	.33½
Ashland	1.55
Abilene	.95
Anthony	1.29
Atwood	1.55
Alma	.77
Burlington	.73
Beloit	1.11
Belleville	1.01
Council Grove	.84
Colby	1.55
Cottonwood Falls	.84
Columbus	.90
Clay Center	.92
Concordia	.99
Coldwater	1.45
Cimarron	1.55
Dodge City	1.37
Dighton	1.45
Erie	.84
Eldorado	1.05
Ellsworth	1.11
Eureka	.92
Emporia	.77
Fort Scott	.73
Fredonia	.90
Goodland	1.66
Great Bend	1.20
Garnett	.66
Girard	.84
Garden City	1.55
Gove (Grainfield)	1.45
Greensburg	1.37
Hiawatha	.70
Howard	1.05
Hays	1.29
Hill City	1.37
Holton	.68
Hoxie	1.45
Hugoton	1.66
Independence	1.00
Johnson	1.66
Iola	.77
Junction City	.87
Jetmore	1.37
Kinsley	1.37
Kingman	1.20
Leoti	1.55
Liberal	1.66
La Crosse	1.29
Lyons	1.11
Larned	1.29
Lyndon	.67
Lincoln	1.11
Leavenworth	.30½
Lakin	1.66
Lawrence	.49
Medicine Lodge	1.37
Mankato	1.11
Mound City	.68
McPherson	1.05
Marion	1.05
Marysville	.90
Meade	1.55
Minneapolis	1.05
Manhattan	.80
Ness City	1.37
Norton	1.37
Newton	1.05
Oberlin	1.55
Ottawa	.56
Oskaloosa	.59
Olathe	.42
Oswego	.92
Osborne	1.20
Paola	.52
Phillipsburg	1.37
Pratt	1.29
Richfield (Rolla)	1.66
Seneca	.84
Stockton	1.29
Salina	1.05
Scott City	1.55
Smith Center	1.29
St. John	1.29
Sharon Springs	1.66
St. Francis	1.66
Sedan	1.05
Syracuse	1.66
Sublette	1.55
Troy	.61
Tribune	1.66
Topeka	.61
Ulysses	1.66
Westmoreland (Blaine)	.84
Wichita	1.11
Wellington	1.20
Washington	.95
Wakeeney	1.37
Winfield	1.11
Yates Center	.80

	Freight Rate
Russell	1.29
Hutchinson	1.11
Russell Springs	1.29
Atoka, Oklahoma	1.55
Anadarko	1.66
Ardmore	1.66
Arapaho	1.55
Arnett	1.37
Altus	1.66
Ada	1.55
Antlers	1.66
Alva	1.37
Beaver	1.96
Boise City	1.84
Buffalo	1.55
Bartlesville	1.05
Cherokee	1.37
Colgate	1.55
Chickasha	1.55
Chandler	1.45
Cheyenne	1.66
Claremore	1.11
Cordell	1.66
Durant	1.55
Duncan	1.66
El Reno	1.45
Enid	1.37
Eufaula	1.37
Fairview	1.45
Frederick	1.76
Guthrie	1.45
Guymon	1.86
Hugo	1.66
Hollis	1.76
Holdenville	1.45
Hobart	1.66
Idabel	1.76
Jay (Southwest City, Mo.)	1.11
Lawton	1.66
Kingfisher	1.45
Medford	1.37
Mangum	1.66
Marietta	1.66
Madill	1.66
Muskogee	1.29
Miami	1.05
McAlester	1.37
Norman	1.55
Newkirk	1.20
Nowata	1.05
Okemah	1.47
Oklahoma City	1.45
Okmulgee	1.37
Pauls Valley	1.66
Poteau	1.45
Purcell	1.55
Pryor	1.20
Perry	1.37
Pawhuska	1.11
Pawnee	1.29
Stilwell	1.29
Sayre	1.66
Sapulpa	1.29
Stigler	1.37
Sulphur	1.66
Stillwater	1.37
Sallisaw	1.37
Tahlequah	1.29
Taloga (Custer)	1.55
Tishomingo	1.66
Tecumseh	1.55
Tulsa	1.29
Vinita	1.05
Watonga	1.55
Walters	1.76
Waurika	1.76
Wewoka	1.45
Wagoner	1.20
Woodward	1.55
Wilburton	1.45

FROM WICHITA TO KANSAS POINTS

	Freight Rate
Atchison, Kansas	1.00½
Ashland	.79
Abilene	.56½
Anthony	.44½
Atwood	1.95½
Alma	.71½
Burlington	.88
Beloit	.98
Belleville	.99
Cottonwood Falls	.53½
Columbus	.79
Clay Center	.83½
Concordia	.87
Coldwater	.78
Cimarron	.88
Council Grove	.89
Colby	1.31½
Dodge City	.81
Dighton	91½
Ellsworth	.61
Eldorado	.35
Eureka	.44½
Emporia	.56½
Erie	.79
Fredonia	.56½
Ft. Scott	.79
Garnett	.78
Great Bend	.65½
Girard	.79
Garden City	1.00½
Greensburg	.83
Goodland	1.44½
Hiawatha	1.30½
Howard	.56½
Hays	.98
Hill City	1.27
Holton	.83
Hutchinson	.44½
Hoxie	1.37
Hugoton	1.05½
Independence	.71½
Iola	.71½
Junction City	.83
Jetmore	.81
Johnson	1.12½
Kinsley	.78
Kingman	.41½
Lawrence	1.00½
Lakin	1.05½
Leavenworth	1.00½
Lincoln Center	.87
Lyndon	.78
Larned	.75
Lyons	.48½
La Crosse	.79
Liberal	1.30½
Leoti	1.05½
Marion	.44½
Marysville	1.06½
Minneapolis	.79
Manhattan	.78
Medicine Lodge	.56½
Mankato	1.00½
Mound City	1.00½
McPherson	.59½
Newton	.55
Ness City	.81
Norton	1.18½
Oberlin	1.76
Ottawa	.79
Oskaloosa	1.00½
Olathe	1.00½
Oswego	.78
Osborne	1.00½
Paola	.79
Phillipsburg	1.05½
Pratt	.53½
Russell	.96½

	Freight Rate
Sedan	.74½
St. Francis	2.07½
Syracuse	1.09½
Sublette	1.00½
Seneca	1.30½
Stockton	1.21½
Salina	.74½
Scott City	1.00½
Smith Center	1.00½
St. John	.65½
Sharon Springs	1.41½
Troy	1.00½
Tribune	1.14½
Topeka	.79
Ulysses	1.05½
Wellington	.35
Washington	1.06½
Winfield	.38½
Yates Center	.56½
Waukeeney	1.08
Meade	1.14½

FROM OKLAHOMA CITY
To Oklahoma Points

Stillwell	$1.19
Cherokee	.90
Atoka	.90
Beaver	1.36
Sayre	.97
Watonga	.66
Durant	.97
Anadarko	.63
El Reno	.48
Ardmore	.83
Tahlequah	1.09
Hugo	1.11
Boise City	1.74
Norman	.43
Colgate	.86
Lawton	.75
Walters	.83
Vinita	1.07
Sapulpa	.84
Arapaho	.83
Arnett	.68
Enid	.75
Pauls Valley	.61
Chickasha	.56
Medford	.86
Mangum	.93
Hollis	1.07
Buffalo	1.11
Stigler	1.09
Holdenville	.72
Altus	.97
Waurika	.83
Tishomingo	.93
Newkirk	.83
Kingfisher	.61
Hobart	.86
Wilburton	.97
Guthrie	.51
Marietta	.86
Purcell	.51
Idabel	1.23
Eufaula	.97
Fairview	.93
Madill	.90
Pryor	1.09
Sulphur	.74
Muskogee	.99
Perry	.66
Poteau	1.09
Chandler	.58
Nowata	1.04
Okemah	.86
Okmulgee	.90
Pawhuska	.93
Miami	1.11

	Freight Rate
Pawnee	.77
Stillwater	.74
McAlester	.86
Ada	.74
Tecumseh	.56
Antlers	1.14
Cheyenne	.99
Claremore	.97
Wewoka	.68
Sallisaw	1.11
Duncan	.74
Guymon	1.63
Frederick	.97
Tulsa	.86
Wagoner	1.04
Bartlesville	.97
Cordell	.86
Alva	.97
Woodward	1.07

FIRST CLASS RATES
FROM TULSA, OKLAHOMA
To Oklahoma Points

Afton	$ .72
Apperson	.77
Barnsdall	.53
Bartlesville	.58
Beggs	.51
Big Cabin	.70
Bokoshe	.86
Boynton	.66
Bristow	.51
Broken Arrow	.41
Calvin	.83
Catoosa	.41
Chandler	.68
Checotah	.70
Chelsea	.56
Claremore	.48
Cleveland	.53
Coal Creek	.90
Collinsville	.43
Council Hill	.70
Coweta	.48
Crowder	.79
Cushing	.63
Davenport	.66
Delaware	.66
Depew	.56
Dewey	.61
Drumright	.61
Dustin	.70
Eram	.63
Eufaula	.75
Fairfax	.72
Fairland	.74
Foraker	.70
Fort Gibson	.63
Glencoe	.68
Gore	.74
Hallett	.53
Henryetta	.63
Holdenville	.79
Howe	.93
Inola	.53
Jennings	.53
Kendrick	.70
Keystone	.43
Lamar	.74
Locust Grove	.72
Maramec	.63
McAlester	.86
Mehan	.70
Miami	.75
Morris	.61
Morrison	.68
Mounds	.46

Mulhall	.83
Muskogee	.61
Newkirk	.86
Nowata	.63
Ochelata	.53
Oilton	.58
Okemah	.80
Okmulgee	.58
Oolagah	.53
Orlando	.79
Osage	.51
Panama	.90
Pawhuska	.58
Pawnee	.61
Perry	.75
Ponca City	.86
Poteau	.93
Prague	.80
Pryor	.74
Quinton	.93
Ralston	.70
Ripley	.68
Salina, Kansas	.75
Sallisaw	.83
Sapulpa	.41
Skiatook	.43
South Coffeyville	.72
Stigler	.77
Stillwater	.72
Stillwell	.93
Strang	.79
Stroud	.61
Tahlequah	.75
Vinita	.66
Wagoner	.61
Warner	.70
Welch	.74
Weleetka	.70
Westville	.90
Wetumka	.74
Wilburton	.93
Wister	.97
Wynona	.61
Yale	.58

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AVERY
CLASSICS

Construction
Machinery & Supplies
The Victor L. Phillips Co.
Kansas City Mo.
Tulsa, Okla. Oklahoma City, Okla.
Wichita, Kans.